

There is no Sraffianism in one country: exploring the interest-profit nexus

Fabrício Pitombo Leite

Universidade Federal da Bahia (UFBA), Brazil

30th International Input-Output Conference
July 5, 2024, Santiago

**There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus**

**Fabrício Pitombo
Leite**

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

**There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus**

**Fabício Pitombo
Leite**

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

**A tentative
explanation**

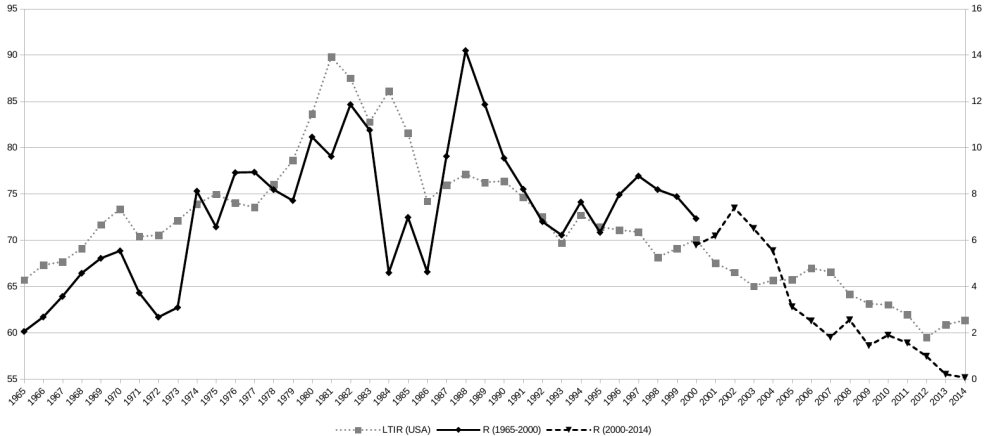
Conclusion

References

- ▶ A well-known claim associated with some Sraffian economists follows the hint that the rate of profit can be determined by the level of the money rate of interest.
- ▶ By exploring the World Input-Output Database (WIOD), for both the long-run version for the period 1965–2000 and 25 countries (WIOD, 2022; Woltjer et al., 2021) and the 2016 release for the period 2000–2014 covering 43 countries (WIOD, 2016; Timmer et al., 2015), this paper tries to make sense of Sraffa's suggestion.

- ▶ One clear regularity emerges from the data: in spite of the relationship between the interest rate and the maximum profit rate is found to be null or negative for most national data, and also negative for pooled data for the period 1965–2000, the relationship between virtually any national interest rate and the maximum rate of profit taking the world as a whole is definitely positive.
- ▶ For the sake of an illustration taking the United States as reference, Figure 1 shows the correlation between USA long-term interest rate (right axe) and world maximum rate of profit: it is 0.55 for the period 1965–2000 and 0.73 for the period 2000–2014.

Figure: Long-term interest rate (USA) and world maximum rate of profit



Source: author's elaboration from WIOD and OECD

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

Introduction

**The monetary
theory of
distribution**

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

- ▶ The branch of Sraffian literature known as monetary theory of distribution, e.g. Pivetti (1985, 1991) and Panico (1988), follows the idea that the rate of profit is “susceptible of being determined from outside the system of production, in particular by the level of the money rates of interest” (Sraffa, 1960, p. 33).
- ▶ Interest rate is exogenously determined by the monetary authority. Wages are determined by collective bargaining (Pivetti, 1991).
- ▶ The basic explanation consists in full-cost pricing (or sort of opportunity cost) by means of the following sequence:
 - ▶ An (e.g.) interest rate hike, as a pressure on cost (or opportunity cost), triggers an increase in prices;
 - ▶ For given (or less responsive) wages, it means a redistribution towards profits.
- ▶ Then, a *long-term* positive relationship is expected between interest and profit rates.

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabrício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

- ▶ There are some recent reassessments and empirical evaluations as in Shaikh (2016); Venkatachalam & Zambelli (2021); Zolea (2022); Lofaros et al. (2023); Gahn (2024); Pivetti (2024). Also...
 - ▶ Recent historical evidence of post-Bretton Woods Central Bank influence on (determination of) long-term interest rates – e.g. Quantitative Easing.
 - ▶ Other considerations that complicate the interest-profit rate nexus: 1) **capital mobility and exchange rate** (Pivetti, 2024); 2) sovereign debt management; 3) different mechanisms of price determination.
 - ▶ Reaffirmed role of the dollar as quasi-world money; Fed's interest rates are the international benchmark for national rates to revolve around.
 - ▶ Enhanced role of capital mobility between countries, sensitive to interest rate evolving international spreads – capital account liberalisation; IT technologies.
- ▶ In this context, how does national interest rates interact with national and international profit rates?

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabrício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

- ▶ Denoting by \mathbf{Z} the matrix of intermediate consumption (or circulating capital) and by \mathbf{x} the gross output vector, the technical coefficient matrix can be computed by

$$\mathbf{A} = \mathbf{Z}\hat{\mathbf{x}}^{-1} \quad (1)$$

- ▶ Taking the world as a whole, the column-vector \mathbf{x} has 598 lines for the long-run version for the period 1965–2000 (25 countries plus a proxy for the rest of the world and 23 sectors) and has 2464 lines for the 2016 release for the period 2000–2014 (43 countries plus a proxy for the rest of the world and 56 sectors). Correspondingly, square matrices \mathbf{Z} and \mathbf{A} are 598×598 and 2464×2464 respectively.
- ▶ For national data, matrix \mathbf{Z} should be understood as including all the inputs produced at any country and used by the selected country so that each sector in line contains the sectoral world production destined to be used as input by each country's sector in column. In that way, national matrix \mathbf{A} should be taken as the technical coefficient matrix for both imported and domestically produced inputs.

- ▶ The maximum rate of profit, R , can be computed for both versions of the World Input-Output Database – the long-run version for the period 1965–2000 and 25 countries (WIOD, 2022; Woltjer et al., 2021) and the 2016 release for the period 2000–2014 and 43 countries (WIOD, 2016; Timmer et al., 2015).
- ▶ For both world and national cases, considering that $\lambda_{\mathbf{A}}$ is the dominant eigenvalue of matrix \mathbf{A} , we can write the maximum rate of profit, R , as

$$R = \frac{1 - \lambda_{\mathbf{A}}}{\lambda_{\mathbf{A}}} \quad (2)$$

- That relationship comes from usual Sraffian price equations, like the presented in Pasinetti (1977, p. 72–77):

$$\mathbf{p}'\mathbf{A}(1+r) + \mathbf{l}'w = \mathbf{p}' \quad (3)$$

where \mathbf{p} is the price vector, \mathbf{l} is the direct-labour coefficients vector, and r is the profit rate and w is the wage share, both scalars. If the wage share is zero, the maximum profit rate R can be obtained:

$$\mathbf{p}'\mathbf{A}(1+R) = \mathbf{p}' \quad (4)$$

$$\mathbf{p}'\mathbf{A} = \frac{1}{1+R} \mathbf{p}' \quad (5)$$

which is an eigensystem problem with $\lambda_{\mathbf{A}} = 1/(1+R)$.

- For the period 2000–2014, the Socio-Economic Accounts (SEA) for the WIOD 2016 release allow the calculation of national maximum rates of profit considering both circulating and fixed capital (R_K), as estimates for the capital stock are available, and also of general uniform profit rates (r and r_K), as the wage shares can be computed from the same dataset. Defining \mathbf{k} and \mathbf{w} , respectively, as vectors for capital stock and wages paid by unit of gross output, and \mathbf{i} being a unit vector, one can obtain the wage share (w) as

$$w = \frac{\mathbf{w}'\mathbf{x}}{\mathbf{i}'(\mathbf{I} - \mathbf{A})\mathbf{x}} \quad (6)$$

and transform the maximum rate of profit (R) into the general rate of profit (r), as in Sraffa's (1960) standard system:

$$r = R(1 - w) \quad (7)$$

- ▶ Now we have capital stock figures, and by dividing them by gross output, capital-output ratios (K/Y) were also computed ($K = \mathbf{k}'\mathbf{x}$ and $Y = \mathbf{i}'\mathbf{x}$) and used as a control variable in panel data analysis. Also from the SEA, real gross output was obtained and its growth rate (g_O) was computed for the same purpose.
- ▶ OECD's (2024) long-term interest rates were utilised along this research and pooled data figures include data from countries with incomplete series for OECD long-term interest rates, which conforms unbalanced panels. For the period 1965–2000, there are 423 observations and for the period 2000–2014 there are 484 observations.

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

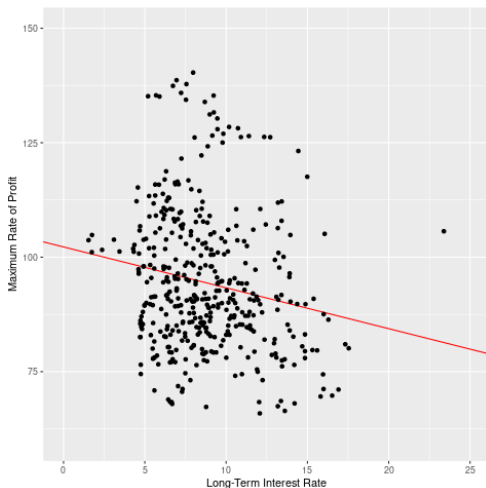
Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

Figure: Pooled data for 1965–2000 on the relationship between long-term interest rate and national maximum rate of profits



Source: author's elaboration from WIOD and OECD

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

[Introduction](#)

[The monetary
theory of
distribution](#)

[Methods and
data](#)

[Results](#)

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

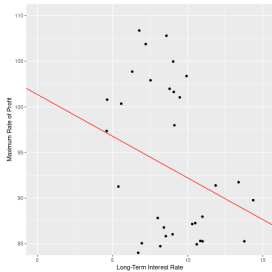
[A tentative
explanation](#)

[Conclusion](#)

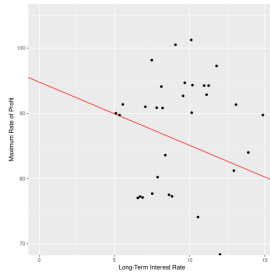
[References](#)

- ▶ In spite of the relationship between the interest rate and the maximum profit rate is found to be null or negative for most national data, the relationship between virtually any national interest rate and the maximum rate of profit taking the world as a whole is definitely positive.
- ▶ Major countries like France, Great Britain and the United States presented interest rates negatively correlated with their national maximum rates of profit, but positively correlated with the world maximum rate of profit.

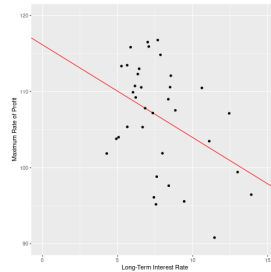
Figure: Long-term interest rate and **national** maximum rate of profits for the period 1965–2000



(a) France

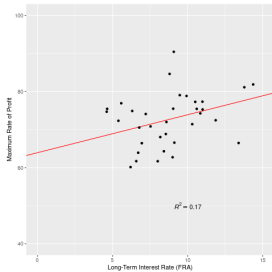


(b) Great Britain

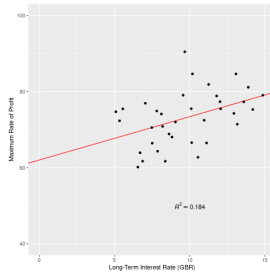


(c) USA

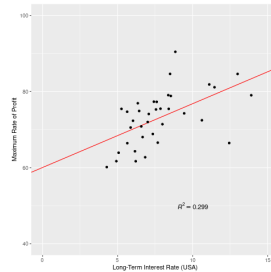
Figure: Long-term interest rate and **world** maximum rate of profits for the period 1965–2000



(a) France



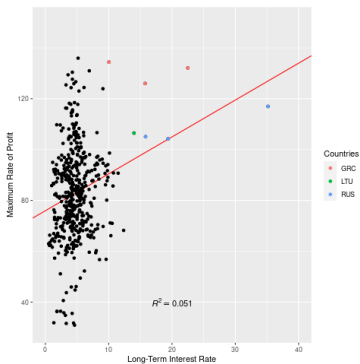
(b) Great Britain



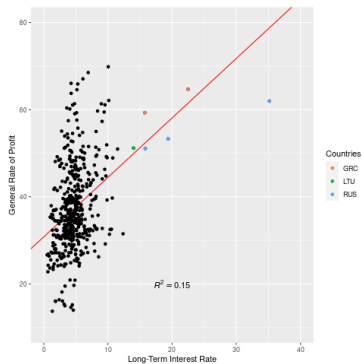
(c) USA

- ▶ Overcoming that limitations on data for the period 2000–2014, a panel with pooled data would find a positive relationship with the interest rate either using maximum or general rates of profit, but one that is contingent to few extremely influential observations for a couple of countries.
 - ▶ In both cases, confirmed by DFFITS statistics apart from visual inspection, a few points with high interest and high profit were spotted, featuring just three countries: Greece, Lithuania and Russia.
- ▶ It is also interesting that flat relationships with national profit rates as in Norway, Sweden or the United States have been turned out to be very strong and positive in the world maximum profit rate case (R^2 of 0.762, 0.810 and 0.537, respectively).

Figure: Pooled data for 2000–2014 on the relationship between long-term interest rate and national maximum and general rates of profits



(a) R



(b) $r = R(1 - w)$

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fab rio Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

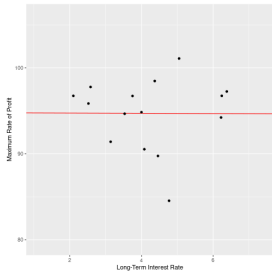
Summing up for the
entire period
(1965–2014)

A tentative
explanation

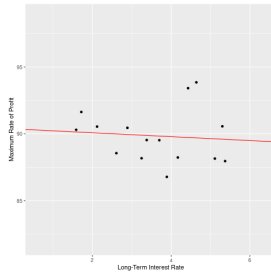
Conclusion

References

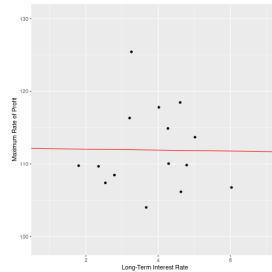
Figure: Long-term interest rate and **national** maximum rate of profits for the period 2000–2014



(a) Norway

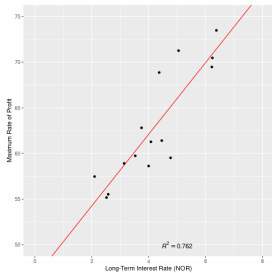


(b) Sweden

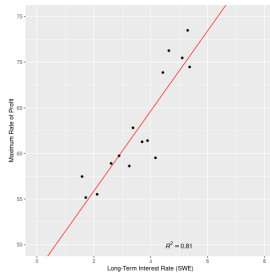


(c) USA

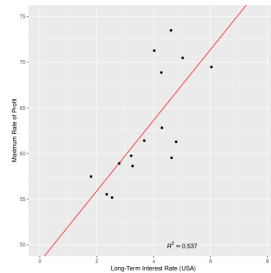
Figure: Long-term interest rate and **world** maximum rate of profits for the period 2000–2014



(a) Norway



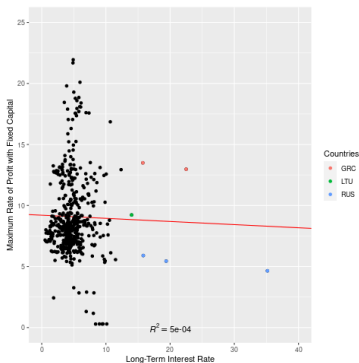
(b) Sweden



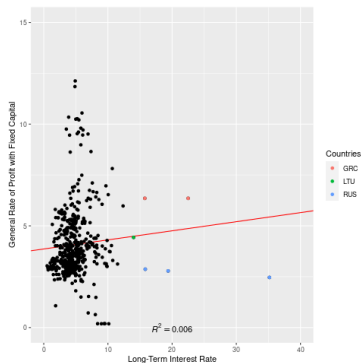
(c) USA

- ▶ By comparing country regression results for maximum and general profit rates, as a rule, the adjustment is not better for the relationship between long-term interest rate and a 43-country general rate of profit.
 - ▶ As long as wage shares are not available for the proxy for the rest of the world, a 43-country general rate of profit is the feasible alternative for a world general profit rate.
- ▶ When the stock of fixed capital is included for the calculation of profit rates, half of the 24 countries with complete interest data present null or negative relationships.
- ▶ Back to pooled data, for profit rates including the stock of fixed capital, the plot shows the lack of a discernible relationship, highlighting that that three previously mentioned countries do not exert the same influence as in the circulating-capital-only case.

Figure: Pooled data for 2000–2014 on the relationship between long-term interest rate and national maximum and general rates of profits with fixed capital



(a) R_K



(b) $r_K = R_K(1 - w)$

There is no Sraffianism in one country: exploring the interest-profit nexus

Fabício Pitombo Leite

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

References

Table: Panel regression results, 2000–2014

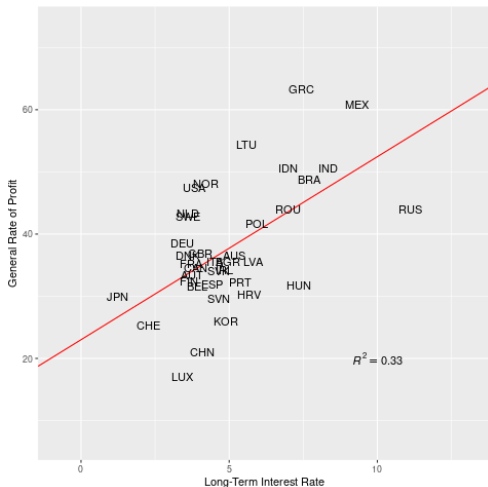
		Dependent variable			
		R	r	R_K	r_K
Pooled	$LTIR$	1.4509	1.3643	-0.0257	0.0447
	R^2	0.0507	0.1501	0.0005	0.0056
Fixed	$LTIR$	0.7994	0.4650	-0.0195	-0.0092
	Adj. R^2	0.8575	0.8780	0.7825	0.7808

Table: Panel regression with control variables, 2000–2014

		Dependent variable: r	
Pooled	$LTIR$		1.5725
	K/Y		4.1309
	g_O		0.2629
	Adj. R^2		0.1683
Fixed	$LTIR$		0.5039
	K/Y		-0.5352
	g_O		0.1944
	Adj. R^2		0.8982

- ▶ For pooled regressions on r , the $LTIR$ coefficient ranges from 1.36 (no controls) to 1.57 (with controls); for fixed-effects regressions, the $LTIR$ estimated coefficients were between 0.47 and 0.50.
- ▶ For both pooled and fixed-effects regressions, the gains in terms of explanatory power with the inclusion of control variables were not great.
- ▶ Between-effects estimation also points to a positive interest-profit relationship for this period.

Figure: Between-country plot for the period 2000–2014 on the relationship between average national long-term interest rate and average national general rate of profit



Source: author's elaboration from WIOD and OECD

There is no Sraffianism in one country: exploring the interest-profit nexus

Fabício Pitombo Leite

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

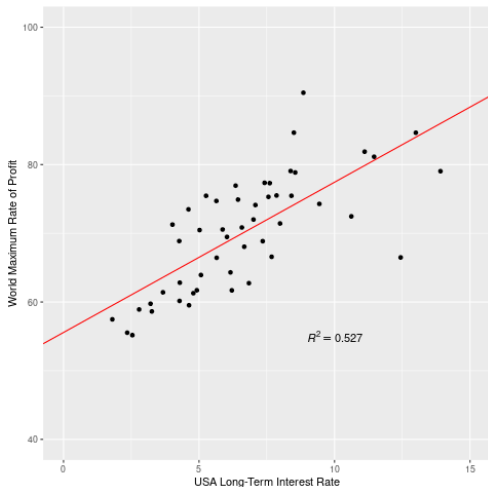
A tentative explanation

Conclusion

References

- ▶ Going back to the relationship between the United States' long-term interest rate and the world maximum rate of profit, R , one could put together the period 1965-1999 from the WIOD long-run version and the period 2000-2014 from the 2016 release and allow for an intercept break between 1999 and 2000.
 - ▶ The next Figure plots this relationship for the 50 observations without that allowance, showing a $R^2 = 0.527$.
 - ▶ This result doesn't change much with the inclusion of a dummy from 2000 onwards in order to capture an intercept break, as the following time series Figure illustrates – now, the adjustment would result in $R^2 = 0.538$.

Figure: Plot for the period 1965–2014 on the relationship between USA long-term interest rate and world maximum rate of profit



Source: author's elaboration from WIOD and OECD

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

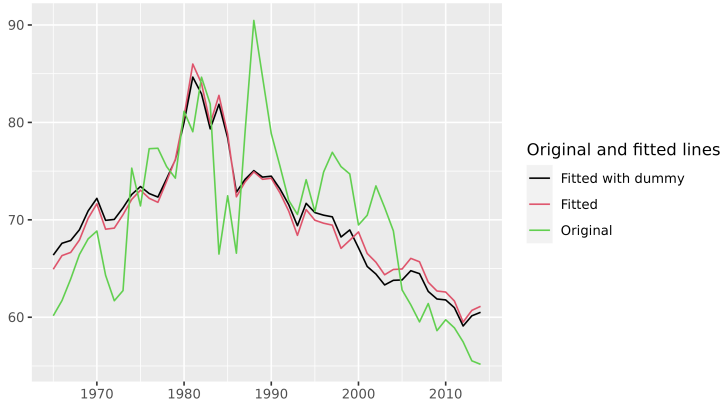
Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

Figure: Original and fitted series for the maximum rate of profit, 1965–2014



Source: author's elaboration from WIOD and OECD

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

**There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus**

**Fabício Pitombo
Leite**

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

**A tentative
explanation**

Conclusion

References

- ▶ In the period analysed, capital was not restricted to national boundaries, with rising mobility post-Bretton Woods. Price increase opportunities to compensate national interest hikes are thus very constrained by international competition – hence, divergence at the national level between interest and profit rate.
- ▶ Additionally, increases in national interest rates follow international, US dominated, trends. National deviations from the international path result in productive investment to migrate to where it is less costlier. The outflow can occur as a consequence of:
 - ▶ Shrinkage of domestic opportunities, boosting the perceived risk appetites to investing abroad;
 - ▶ Reduced value of the national capital stock;
 - ▶ Depressed national output and prices.
- ▶ Internationally, since capital can not go to Mars, the competitive pressure to not raise prices is diminished when faced with rising international interest rates – positive correlation.

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabrício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

- ▶ Do rising interest rates need to be followed by higher inflation to lead to higher profit rates? No. According to Pivetti's wage-setting understanding, capital can achieve higher profit rates moving to where surplus is larger (low wage countries).
- ▶ Nonetheless, there is also the possibility of real wages not acting as the adjustment variable. Then, it is not the general profit rate that adjusts, but, as seen, it is the world maximum profit rate itself!

Table of Contents

Introduction

The monetary theory of distribution

Methods and data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the entire period (1965–2014)

A tentative explanation

Conclusion

**There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus**

**Fabício Pitombo
Leite**

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

**There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus**

**Fabrício Pitombo
Leite**

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References

Thank You!

Fabrício Pitombo Leite
fabricio.leite@ufba.br

- Gahn, S. J. (2024). Interest and profit: an empirical assessment of the monetary theory of distribution for the Euro Area. *Review of Political Economy*, 36(2), 685–701.
- Lofaros, A., Matamoros, G., & Rochon, L.-P. (2023). Monetary policy and income distribution: the post-Keynesian and Sraffian perspectives. *Review of Political Economy*, 0(0), 1–27.
- OECD (2024). Long-term interest rates (indicator). Organisation for Economic Co-operation and Development. Accessed on 10 January 2024.
URL <https://dx.doi.org/10.1787/662d712c-en>
- Panico, C. (1988). *Interest and profit in the theories of value and distribution*. New York: St. Martin's Press.
- Pasinetti, L. L. (1977). *Lectures on the theory of production*. New York: Columbia University Press.
- Pivetti, M. (1985). On the monetary explanation of distribution. *Political Economy*, 1(2), 73–102.
- Pivetti, M. (1991). *An essay on money and distribution*. London: MacMillan.
- Pivetti, M. (2024). A note on the real effects of interest rate policy and its impact on inflation. *Review of Political Economy*, 16(2), 600–609.
- Shaikh, A. (2016). *Capitalism: competition, conflict, crises*. New York: Oxford University Press.
- Sraffa, P. (1960). *Production of commodities by means of commodities: prelude to a critique of economic theory*. Cambridge: Cambridge University Press.
- Timmer, M. P., Dietzenbacher, E., Los, B., Stehrer, R., & de Vries, G. J. (2015). An illustrated user guide to the world input–output database: the case of global automotive production. *Review of International Economics*, 23, 575–605.
- Venkatachalam, R., & Zambelli, S. (2021). Sraffa, money and distribution. In A. Sinha (Ed.) *A Reflection on Sraffa's Revolution in Economic Theory*. Palgrave Macmillan Cham.
- WIOD (2016). World Input–Output Database 2016 Release.
URL <https://doi.org/10.34894/PJ2M1C>
- WIOD (2022). Long-run World Input–Output Database Version 1.1, March 2022 Release.
URL <https://doi.org/10.34894/A7AXDN>
- Woltjer, P., Gouma, R., & Timmer, M. P. (2021). *Long-run World Input–Output Database: Version 1.1 Sources and Methods*. University of Groningen: Groningen Growth and Development Centre.
- Zolea, R. (2022). A history of the relationship between interest rate and profit rate in heterodox approaches. *International Journal of Political Economy*, 51(2), 121–136.

There is no
Sraffianism in
one country:
exploring the
interest-profit
nexus

Fabício Pitombo
Leite

Introduction

The monetary
theory of
distribution

Methods and
data

Results

The period 1965–2000

The period 2000–2014

Panel data results

Summing up for the
entire period
(1965–2014)

A tentative
explanation

Conclusion

References