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Is labour the fall guy of a financial-led globalisation? A cross-country inquiry on globalisation, financialisation and employment at the industry level

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Abstract Financialisation and globalisation have important implications for the functioning of economies and, in particular, for employment. However, their impact on labour market dynamics has not been sufficiently analysed. The aim of this article is to contribute to fill this gap in the literature with a cross-country analysis at the industry level. The authors identify four industry dynamics (Protection, Expansion, Escape from production and Decline with sunk costs) and explore the hypothesis that financialisation is a phenomenon mostly specific to mature developed economies. They provide an econometric analysis at the country and industry level of the relationship between globalisation, financialisation and employment over the period 1995–2009. They estimate a standard labour demand function in which they introduce financialisation as a demand shifter. They also propose a simple model to explain the financialisation phenomenon and provide a regression testing its prevalence, including regressions with an interaction term between offshoring and financialisation. Their result does not point out to a financial-led globalisation but shows that labour is impacted negatively through the financialisation observed in certain industries.

Keywords Offshoring · Globalisation · Financialisation · Employment · Industry dynamics

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1 Introduction

Financialisation and globalisation are two buzzwords whose definitions are not always clear. But they capture key dimensions of economic change in the past decades. On the one hand, diminishing trade barriers and improved communication and transport infrastructure have led to a strong rise in trade and the expansion of global value chains (Bair 2009; Cattaneo et al. 2010; Gereffi 2014). On the other hand, financial markets liberalisation has changed the relationship between financial institutions and the non-financial sector (Palley 2007). Both of these trends have important implications for the functioning of economies and, in particular, for wages and employment. However, their impact on labour market dynamics has not been sufficiently analysed. The aim of this article is to contribute to fill this gap in the literature with a cross-country analysis at the industry level.

Macroeconomic research focusing on financialisation looks at the changing relationship between financial markets and non-financial firms and stresses its potential negative impact on investment. According to this literature, financial liberalisation in high-income economies in the 1980s has led to a shift in power in favour of shareholders, refocusing management priorities and reducing firms' propensity to invest (Stockhammer 2004, 2005; Lazonick and O'Sullivan 2000; Orhangazi 2008; Aglietta and Berrebi 2007; Krippner 2005). More precisely, it is argued that this stylized fact results from the combination of two mechanisms. First, increased financial investment opportunities have crowded out real investment. Second, the increased payments required by financial markets have decreased internal funds available for investment and shortened the planning horizon of firms' management. Under the pull and push pressures from financial markets, non-financial firms have become less keen on investing. Sluggish growth and poor employment performance could then be related to this financialisation.

On the other hand, there has been a huge amount of theoretical and empirical research dedicated to the effects of trade on labour, generally concluding that the reallocation of resources in response to freer trade is favourable to productivity, growth and employment (for example Dutt et al. 2009). The literature on offshoring suggests that this relationship is less straightforward, pointing out a greater volatility in employment (for a survey, see Crinò 2009). The idea that imports represent necessarily a loss of employment has been dismissed as competitive gains from lower input prices can foster exports (Bas and Strauss-Kahn 2014). However, there is mounting evidence that the adjustment costs related to trade in final and intermediate goods could be substantial, resulting in growing inequalities and leaving the net effect on employment ambiguous (Egger and Kreickemeier 2009; Stone 2013). Following Rodrik's (1997) insight about the effect of globalisation on wages and employment, recent research suggests that the rise in offshoring and the development of international production networks could explain the significant increase in labour elasticity in developed economies and the subsequent reduction in job security and workers' bargaining power (Hijzen and Swaim 2010; Senses 2010). Pointing in the same direction, Foster-McGregor et al. (2013) have shown that, at

the industry level, offshoring has negatively impacted labour demand for all skill levels, an effect especially strong for medium-skilled workers.

But, so far, the literature on financialisation and the literature on the effects of globalisation on labour have been rarely linked. Notable exceptions are Palpacuer (2008) and the work conducted by Milberg and Winkler. In particular, the latter focuses on the combined effects of globalisation and financialisation to explain poor wage and employment performance in developed countries (Milberg 2008; Milberg and Winkler 2010, 2013). One of their core arguments is that the effects of offshoring on labour demand are mitigated by a mark-up effect (Milberg and Winkler 2010). In competitive markets, the direct substitution of domestic labour with foreign labour through offshoring and the productivity effect resulting from specialization have a negative impact on labour demand. However, this negative impact can be offset by a scale effect as lower prices increase demand for output and then labour demand. But in the context of global value chains driven by lead oligopoly firms, the effects of offshoring on labour demand could differ substantially. If firms are not able to pass the gains from diminishing input prices to consumers, the scale effect disappears. It is replaced by a mark-up effect where firms improve their profits. There is still the possibility for labour demand to increase if these additional profits are invested and if the resulting increase in productivity benefits consumers and increase their demand. But if offshoring allows firms to limit investment, to reduce the scope of their activities and to increasingly dedicate their profits to payments to financial markets in the form of dividends and share buybacks, the overall impact on labour demand may be dominated by the substitution effect, leading to decreasing domestic employment and depressed wages.

Against this backdrop, the aim of the paper is to introduce new empirical evidence in the policy debate on globalisation, financialisation and employment by bringing some insights from industry-level data. As suggested by the above analysis, the competitive or oligopolistic nature of industries matters for the expected impact of globalisation and financialisation on employment. In the rest of the paper, we define financialisation restrictively as a process of diminishing reinvested profits. We try to asses to what extent, as suggested by Milberg and Winkler, financialisation is preventing potential dynamic gains from globalisation to materialize or, alternatively, whether financialisation is merely a symptom in the of process of reallocation of capital in the context of moving comparative advantage and structural changes in consumption patterns.

The paper is organised as follows. Section 2 explains our analytical framework with four industry dynamics of employment and financialisation and links them to several economic determinants, including offshoring and value added imports. Section 3 describes the data and the econometric methodology used to test the hypothesis presented in Sect. 2. Section 4 provides the main econometric results with regressions on labour demand and the investment-to-profit ratio (IPR). Section 5 discusses these results and presents additional results within the four industry dynamics. Section 6 concludes.

2 Analytical framework

In order to investigate the effects of the financialisation–globalisation nexus on employment, we propose an analytical framework that allows us to capture the diversity in industry dynamics and the variety of outcomes across countries. Due to data limitations and the complexity of the relationships involved, we limit our analysis to the impact of financialisation and globalisation on employment and do not consider important related issues such as wages, skills and inequalities.

2.1 Definitions

Following the literature, financialisation can be described as a divorce between profits and accumulation (Stockhammer 2004; Husson 2013). Financialisation has been defined as a shift in the use of profits with an increase in the acquisition of financial assets and/or a higher share of profits distributed to shareholders and lending institutions at the expense of fixed capital formation. The ratio of reinvested earnings can thus be used as a proxy for financialisation and measured by the ratio of fixed investment (I) to profit (P), both being taken as a share of value added.

Financialisation, i.e. a reduction in the fixed investment share to the profit share ratio, is occurring (F+) between t_0 and t_n when $\frac{I_{t_n}}{P_{t_n}} < \frac{I_{t_0}}{P_{t_0}}$. It may result from an increase in profits and/or a diminution in fixed investment relatively to value added. There is no financialisation (F−) when $\frac{I_{t_n}}{P_{t_n}} \geq \frac{I_{t_0}}{P_{t_0}}$.

The share of profit not dedicated to investment is used for the remuneration of capital, including several types of assets that can be regarded as immaterial investment, such as technology payments. This can be an issue in our analysis, especially since measuring this knowledge-based capital is very difficult (Plihon and Mouhoub 2009; Andrews and Criscuolo 2013). However, it should be pointed out that most of knowledge-related expenditures are captured in national accounts data either as services intermediate inputs (for example R&D services, especially when R&D is outsourced) or as are part of the definition of fixed investment (I). Software, for example, should be included in fixed investment according to the 2008 System of National Accounts. Therefore, the bias should be limited and in our empirical analysis we include a skill and technology variable to take it into account.

We consider globalisation through the offshoring of inputs and imports of value added in final demand. We define offshoring as the increase in the use of foreign inputs in domestic industries, following Feenstra and Hanson (1999). We also consider the prevalence of imports of final products in the industry, pointing to an intense international competition on this market segment. We measure it through a significant increase in foreign value added in domestic final demand, an indicator coming from the recent literature on trade in value added (Timmer et al. 2014). This captures traditional trade in final products but also another form of offshoring, which is the offshoring of the assembly of goods. When goods are assembled off-shore, traditional measures of offshoring looking only at the use of foreign inputs do

not increase but this can also lead to increased foreign value added in domestic consumption.

Finally, we define employment as the number of hours worked. In a context of global under-employment, such measure better reflects the dynamic of the labour market because, contrary to the number of employees, it is not affected by the changing importance of part-time jobs and other forms of hidden unemployment. (E+) means an increase in the number of hours worked and (E−) a reduction.

2.2 Four industry dynamics

The starting point in our analysis is the definition of four industry dynamics based on the change in employment and financialisation (i.e. the IPR) (Table 1). As we will see in the next Section, the four categories are all empirically observed. We provide here a description of these four industry dynamics and what we assume to be their main drivers, before testing empirically these hypotheses.

The combination of growing employment and financialisation is the first category in Table 1. It can occur in expanding industries where firms manage to maintain their competitive advantage while giving priority to the remuneration of shareholders and/or financial operations rather than to investment. We expect this situation in mature industries benefiting from significant barriers to entry, hence the label "protection".

The combination of employment improvement and no financialisation corresponds to a dynamic in which firms expand their activity and dedicate the gains to higher investment and/or to wage increases. Such behaviour reveals an optimistic anticipation of profits, which corresponds to the growth stage of an industry.

The combination of diminishing employment and financialisation occurs in the context of declining sectors where shareholders try to escape from production. Facing gloomy prospects for their activity, firms maintain or expand their payments to shareholders instead of investing, allowing a reallocation of capital towards more dynamic industries or countries.

The last category highlights a situation of decline with diminishing employment but not accompanied by financialisation. In this case, while the industry faces adverse market conditions, shareholders are not able to extract equity in order to proceed to a reallocation of capital because of sunk costs.

A standard Ricardian approach can explain the "expansion" and "escape from production" patterns identified above. Similar dynamics of employment and reinvested earnings are driven by changing comparative advantage and structural transformations in consumption at the industry level. Improved (worsened) comparative advantage, translating into lower (higher) imports of final and/or

Table 1 Four Industry dynamics according to the evolution of employment and financialisation

	F+	F−
E+	Protection	Expansion
E−	Escape from production	Decline with sunk costs

intermediate inputs and changing consumption patterns which increase (decrease) demand for final products, is associated with growing (diminishing) employment and with more (less) reinvested earnings. In general, improving (worsening) comparative advantage and/or final demand means higher (lower) profits, which gives firms the incentives to increase (decrease) employment and investment in order to expand (reduce) their production.

However, Milberg and Winkler (2010) propose an alternative explanation to the "escape from production" scenario of declining employment and financialisation. In their analysis, it can be explained by the substitution effect and mark-up effect of offshoring. Oligopolistic firms improve their profits as they do not pass to their customers the lower input prices resulting from offshoring. Neither do they increase their investment because of the shareholder value orientation of their management. The main driver here is supposed to be offshoring but also the offshoring of the assembly of goods which is captured in imports of final goods in trade statistics (but not in traditional offshoring indices based on intermediate consumption).

In order to account for the two other categories, one needs to go beyond the standard Ricardian framework and Milberg and Winkler's hypothesis. First, facing adverse market conditions a firm could diminish employment but not be able to reduce its rate of reinvested earnings. In this specific configuration, firms facing a degradation of their comparative advantage and/or final demand are compelled to invest because a reduction in their investment would accelerate their exit from the market or increase the losses induced by previous sunk investment. Such behaviour -particularly relevant in capital-intensive industries such as the automotive industry or the semi-conductor industry—has been qualified by Crotty as coerced investment (1993, 2005) and corresponds to the pattern of "decline with sunk costs" characterised by diminishing employment and no financialisation.

One can also consider a situation where demand is improving but where the dynamics of comparative advantage is not relevant because of significant barriers to entry—in particular in non-tradable industries with weak imports of final goods—but with a possible recourse to offshoring—and high oligopolistic profits. In this case, firms are not compelled to invest but expand employment in order to meet the evolution of demand. This pattern of "protection" is characterised by increasing employment and financialisation.

Our empirical analysis will allow us to explore the diverse impact of offshoring, financialisation and other variables on employment depending on the industry dynamics.

One particularly interesting issue is the diverging explanation for the "escape from production" dynamic, which is associated with the deterioration of comparative advantage, demand and profit in the Ricardian framework, but is associated with growing profits in Milberg and Winkler's framework.

Additionally, we will also test the hypothesis that financialisation is a phenomenon mostly specific to mature developed economies while industries in emerging economies are more prone to "expansion" with growing employment and no financialisation. Indeed, for similar industries, investment opportunities are higher in emerging countries than in high-income economies because labour is relatively cheaper while capital is relatively scarcer. Moreover, these economies

have the possibility to catch-up with industries in more advanced economies by leap-frogging to the most efficient techniques of production and are not constrained by the disadvantages of the front-runners (Veblen 1994; Gerschenkron 1962; Amsden 1989), although new policy challenges may arise in the context of 'compressed development' (Whittaker et al. 2010).

3 Data and methodology

In order to test the analytical framework described in Sect. 2, we provide in the rest of the paper an econometric analysis at the country and industry level of the relationship between globalisation, financialisation and employment over the period 1995–2009. Our strategy is the following: first we run panel regressions where all industries and countries are pooled together. We start with the estimation of a standard labour demand function, as it is done in previous papers investigating the impact of offshoring on employment, but we introduce financialisation as a demand shifter. We also propose a simple model to explain the financialisation phenomenon and provide a regression for all countries and industries testing its prevalence. In order to capture industry dynamics, we then run the same regressions in four groups of countries/industries following the typology presented in Table 1. These regressions test more specifically our hypotheses regarding the relationship between globalisation, financialisation and employment in different types of industries. We also distinguish between developed and emerging economies.

3.1 Data

The empirical analysis relies on the World Input-Output Database (WIOD) described in Timmer (2013), which is a set of world input–output tables (WIOTs) covering 40 countries and 35 industries over the years 1995–2011 (September 2013 update). This dataset is particularly relevant for a comparison across countries and industries as it is based on harmonised national accounts. In addition, WIOTs cover all inter-country inter-industry transactions and are the ideal tool to understand global production, with indicators going beyond the traditional measures of offshoring.

Moreover, the WIOD includes tables in previous year prices for 1995–2009, allowing the comparison of output and value added over time in real terms and the calculation of chain price indexes for gross output and the cost of inputs. There are also socio-economic accounts with data on labour, capital and investment for 1995–2009. To take advantage of these data, we limit our dataset to this period. We keep all countries, except two very small EU economies (Cyprus and Malta). The dataset thus covers 38 countries, which are mostly developed countries (Australia, Austria, Canada, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Japan, Korea, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, the United Kingdom and the United States) but

also includes 8 emerging economies (Brazil, China, Mexico, India, Indonesia, Russia, Chinese Taipei and Turkey).

From the WIOTs, we collect information at the industry level on output, value added, final demand and the use of intermediate inputs. We calculate offshoring indexes following Feenstra and Jensen (2012) as the share of foreign intermediate inputs in total intermediate use (for a given industry). Building on the work of the OECD and WTO on trade in value added, we also calculate the foreign content in domestic final demand (*imports* of value added) which can be a proxy for the import penetration of products that have been assembled off-shore and complements the measure of the offshoring of inputs. These flows are obtained by multiplying a vector of value added by industry and country by the Leontief inverse of the WIOTs and then by a vector of final demand. For each country, we obtain a matrix that describes the origin of the value added in final demand and summing the foreign and domestic elements, we can decompose final demand into domestic and foreign value added, as it is done by Timmer et al. (2014). The WIOTs also have gross exports by industry and we use these data to calculate the revealed comparative advantage in each industry, i.e. the share of an industry in the exports of a given country divided by the share of this industry in world exports (Balassa 1965).

From the WIOD socio-economic accounts, we have directly for each country and industry: the number of hours worked (our employment variable), the labour compensation, the gross operating surplus (calculated as value added minus labour compensation), investment (gross fixed capital formation) and a real capital stock. We also have a price index for intermediate inputs as well as the share of high, medium and low skill employment.

The WIOD industry classification is based on NACE Rev. 1. We drop from the dataset 5 sectors that are mostly non-market services: 'public administration and defence', 'education', 'health and social work', 'other community, social and personal services' and 'private households with employed persons'. These activities are not part of global production networks and less relevant for our analysis. Inputs coming from these industries are however included in all our calculations. The list of industries can be found in Table 7 in the "Appendix". Descriptive statistics for each variable used in our regressions is provided in Table 8 in the "Appendix".

3.2 Descriptive statistics by type of industry dynamic

The average percentage changes presented in Table 2 help to understand some of the characteristics of the different types of industries we have described. They highlight that financialisation is not linked to an overall negative industry dynamic in terms of output, revealed comparative advantage and profits. Gross output and the revealed comparative advantage significantly grow for the industries belonging to the "escape from production" and "protection" categories.[1] Profits (gross operating surplus) also increased on average for the industries belonging to the "protection"

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[1] RCA indexes have a positive average percentage change in all groups of industries because specialization is the dominant trend over the period. There are high increases in RCA indexes that offset the negative percentage changes observed in other industries when calculating the average.

Table 2 Average percentage change for selected variables, by type of industry dynamic

Average percentage change

Group of industries/countries, based on industry dynamics	Hours worked (%)	Investment profit ratio (%)	Gross output (%)	Gross operating surplus (%)	Capital/labour ratio (%)	Off shoring index (%)	Foreign VA in final demand (%)	Revealed comparative advantage (%)
Expansion	3.6	14.5	5.3	−3.2	2.5	4.5	4.3	18.1
Escape from production	−3.4	−17.0	1.1	8.2	5.9	−1.3	−0.7	2.3
Decline with sunk costs	−3.6	20.0	0.7	−7.9	6.5	3.1	4.2	0.7
Protection	3.6	−10.9	5.8	10.3	0.9	2.7	2.4	3.4

Industries/countries weighted by their value added, average annual change within each group of industries/countries when pooling all years

dynamic and even in the case of the "escape from production". In the case of the "protection" category where financialisation took place, both offshoring and foreign value added have increased, suggesting that the transmission of economic gains from globalisation to shareholders pointed out by Milberg possibly occurred in these sectors.

The "decline with sunk costs" category appears to fit Crotty's hypothesis of coerced investment in capital-intensive sectors. In this group where the capital/labor ratio rose rapidly, declining employment and increasing IPR ratio went along with dramatically diminishing profits and sluggish growth of output and RCA. Interestingly, imports of foreign value added and offshoring were almost as much as dynamic in this group as in industries in expansion, reflecting on the one hand growing competitive pressure from imports and, on the other hand, the search for lower input costs. Finally, industries in expansion have experienced a very positive overall dynamic in terms of revealed comparative advantage and output in the context of deepening offshoring and increased imports of foreign value added.

These descriptive statistics encourage to look further at the relationship between offshoring, capital formation and employment and to test econometrically some of the explanations proposed by the literature on financialisation.

3.3 Impact of financialisation and offshoring on employment

First, to test whether financialisation and offshoring have an impact or not on employment, we run labour demand regressions. Following Hamermesh (1993), the demand for labour can be seen as a profit maximising problem where in the short-run firms minimise costs for a given level of capital and output (conditional labour demand). The labour demand then depends on the price of the variable inputs and a series of structural demand shifters such as technical change or offshoring. In our case, we are interested in checking whether the investment-to-profit ratio (IPR) is also empirically significant as a 'demand shifter'.

We estimate the following function at the industry level:

$$\ln L_{ijt} = \beta_0 + \beta_1 \ln w_{ijt} + \beta_2 \ln k_{ijt} + \beta_3 \ln y_{ijt} + \sum_{h}^{H} \gamma_h \ln Z_{ijth} + \tau_t + \in_{ijt} \qquad (1)$$

where L_{ijt} is the demand for labour (hours worked) in country i, industry j at year t, w_{ijt} is the ratio of the hourly wage to the price of intermediate inputs, k_{ijt} is the capital stock, y_{ijt} is gross output and Z_{ijth} is a set of demand shifters that include an offshoring index but also the foreign value added in domestic final demand and the IPR (our financialisation variable). As a proxy for technology, we use the share of high skill labour in total labour. We use an estimation in difference to control for unobserved time invariant factors influencing labour demand. We add year fixed effects for unobserved time-varying heterogeneity. Standard errors are clustered in the dimension of the panel.

A similar empirical model is used by Hijzen and Swaim (2007) to study the impact of offshoring at the industry level, as well as by Foster-McGregor et al. (2013) who run regressions on the same WIOD dataset.

Equation (1) measures the impact of offshoring and the financialisation for a given level of output. In the case of offshoring, it captures the substitution effect. To produce the same quantity of output, firms rely on a lower quantity of labour because offshoring allows them to substitute foreign labour (embodied in imported intermediate inputs) to domestic labour. To test whether there is also a scale effect, i.e. an increase in employment as firms are more productive and can sell more output, a second estimation is generally run where this time output is no longer fixed. The empirical model becomes:

$$\ln L_{ijt} = \beta_0 + \beta_1 \ln w_{ijt} + \beta_2 \ln k_{ijt} + \beta_3 \ln py_{ijt} + \sum_h^H \gamma_h \ln Z_{ijth} + \tau_t + \in_{ijt} \quad (2)$$

where py_{ijt} is the price of output and reflects the impact of market conditions on labour demand.

This unconditional labour demand measures the overall impact of offshoring on employment and in our analysis can also indicate the overall impact of financialisation on employment, especially when controlling for offshoring. We also run regressions with an interaction term between offshoring and financialisation to test whether the impact of offshoring on labour demand is affected by the level of financialisation.

3.4 Impact of offshoring on the investment-to-profit ratio

To further test the financialisation assumption, we need also to assess to what extent offshoring leads to a lower IPR. This variable takes a lower value when less of the gross operating surplus is devoted to investment as opposed to the remuneration of shareholders, i.e. when financialisation occurs.

We can start from a model similar to the demand for labour, since the demand for capital is also a function of the price of inputs and some demand shifters. We have assumed a quasi-fixed capital and the stock of capital can become an independent variable in the empirical model with the IPR being a share of capital compensation. We estimate the following function:

$$\ln IPR_{ijt} = \beta_0 + \beta_1 \ln k_{ijt} + \beta_2 \ln P_{ijt} + \beta_3 \ln L_{ijt} + \beta_4 \ln y_{ijt} + \sum_h^H \gamma_h \ln Z_{ijth} + \tau_t + \in_{ijt}$$
$$(3)$$

where IPR_{ijt} is the IPR in country i, industry j at year t, k_{ijt} is the stock of capital, P_{ijt} is the gross operating surplus (remuneration of capital) relative to the price of inputs, $\ln L_{ijt}$ is the stock of labour (hours worked), y_{ijt} is gross output and Z_{ijth} is a set of demand shifters. We include in the estimation the same demand shifters as in Eqs. (1) and (2) (with the exception of the IPR). We also add RCA indices to control for the role of specialisation in industries where the country has a comparative advantage and where therefore more investment is expected. The model is also estimated in difference with year fixed effects and clustered standard errors.

It should be noted that in the above specification we control for the level of profit (gross operating surplus) so that a change in the IPR ratio can be attributed to a

change in the allocation of profit to investment or shareholders (or other assets) rather than being the consequence of a change in the profit share.

4 Results

4.1 Labour demand regressions

Results of the estimation of the conditional and unconditional labour demand are presented in Table 3. For the whole dataset, the main variables have the expected sign. Higher wages (relative to the price of inputs) are associated with lower employment both in the conditional and unconditional labour demand. An increase in the capital stock increases employment for a given level of output suggesting a complementary relationship between capital and labour in the short run but in the

Table 3 Regression results for the conditional and unconditional labour demand

	Conditional labour demand coef/se		Unconditional labour demand coef/se	
	(1)	(2)	(3)	(4)
Wage/price of material inputs	−0.290***	−0.290***	−0.214***	−0.214***
	(0.024)	(0.024)	(0.023)	(0.023)
Capital stock	0.163***	0.163***	0.164***	0.164***
	(0.017)	(0.017)	(0.021)	(0.020)
Gross output	0.465***	0.465***		
	(0.051)	(0.051)		
Price of gross output			0.206***	0.206***
			(0.032)	(0.032)
IPR	0.027***	0.027***	0.017***	0.017***
	(0.004)	(0.004)	(0.004)	(0.004)
Offshoring index	−0.020*	−0.020*	0.025**	0.025**
	(0.012)	(0.012)	(0.013)	(0.013)
Foreign VA in final demand	0.036***	0.036**	−0.022*	−0.022
	(0.014)	(0.014)	(0.013)	(0.014)
Share of high skill labour	−0.001	−0.001	−0.002	−0.002
	(0.007)	(0.007)	(0.008)	(0.008)
Interaction IPR-offshoring		−0.007		−0.000
		(0.397)		(0.048)
Number of observations	14,493	14,493	14,493	14,493
F	26.827	25.771	17.810	17.005
R^2	0.350	0.350	0.173	0.173
Adjusted R^2	0.349	0.349	0.172	0.172

Clustered standard errors in parentheses. Regressions in first difference. Constant and fixed effects not reported

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

unconditional labour demand the capital stock is no longer significant. Output is very significant and positively correlated with employment in the conditional demand, as one can expect. The price of output (relative to the price of inputs) is also significant and positive in the unconditional labour demand.

When looking at the demand shifters, the offshoring index is negative and weakly significant in the conditional labour demand (Column 1) and positive and relatively more significant in the unconditional function (Column 3). The negative sign in the conditional labour demand is consistent with the substitution effect where for the same level of output there is less employment when part of the production is offshored. The positive result in the unconditional labour demand is in line with other papers that find a small positive overall effect of offshoring on employment, such as Foster-McGregor et al. (2013). The foreign value added in domestic final demand is also significant in the conditional labour demand regression. A positive sign suggests that for a given level of output, more competition on final products is associated with more employment. But the overall effect of the offshoring of final assembly seems to be negative (although weakly significant) when looking at the unconditional labour regression. This result is interesting and tends to suggest a difference between the offshoring of inputs and the offshoring of final products. The interpretation should however be cautious since the foreign value added in domestic final demand is an imperfect proxy for the offshoring of the final assembly of goods. As far as technology is concerned, we do not find any significant relationship between the share of high skill labour and the demand for labour. We tried other proxies (such as R&D intensity but with data limited to a smaller sample of countries) and none of them were significant.

The main result from Table 3 is that both in the case of the conditional and unconditional labour demand, the IPR is a significant positive demand shifter. This result is robust to alternative specifications or when adding more years in the estimation in difference (results not reported). Industries where investment represents a higher share of the gross operating surplus (i.e. less financialisation) have more employment. The elasticity suggests that a 1 % increase in the IPR is associated with a 0.02 % increase in employment. This is not a high impact but the size of the coefficient is similar to what is measured for offshoring. The literature on financialisation is therefore not wrong in assuming that there is a relationship between employment and the way the gross operating surplus is allocated between investment and the remuneration of shareholders.

However, when adding an interaction term (Columns 2 and 4), there is no significant result. The size and significance of the main variables is not affected and therefore our dataset does not suggest that the financialisation phenomenon has an incidence on the relationship between offshoring and employment. The negative impact of the financialisation and the positive impact of offshoring on labour demand seem unrelated when looking at the interaction term in the unconditional labour function.

4.2 Regressions on the investment-to-profit ratio

To further test the financialisation assumption, we also run a panel regression on the IPR. Results are presented in Table 4 below.

Table 4 Regression results for the investment-to-profit ratio

	IPR coef/se
Capital stock	0.026
	(0.050)
Gross operating surplus	−0.271***
	(0.017)
Employment (hours)	0.497***
	(0.073)
Wage/price of material inputs	0.505***
	(0.056)
Revealed comparative advantage	−0.017***
	(0.006)
Offshoring index	0.179***
	(0.043)
Foreign VA in final demand	0.284***
	(0.060)
Number of observations	12,727
F	25.063
R^2	0.138
Adjusted R^2	0.137

Clustered standard errors in parentheses. Regressions in first difference. Constant and fixed effects not reported

*** $p < 0.01$

The model has overall a lower fit (lower R-squared) but still most of the variables are significant with the exception of the capital stock. The number of hours worked has a strong positive impact on the IPR, confirming the correlation between financialisation and lower employment. The price of labour (wage) is positively correlated with the IPR, suggesting a substitution effect between capital and labour when the price of labour increases. While a standard Ricardian approach would suggest more investment in sectors where there is an improving revealed comparative advantage or growing profits, there is on the contrary more financialisation in both cases. Thus, financialisation does not appear as a way to reallocate capital from less productive to more productive sectors. The offshoring index is, however, positively correlated with the IPR, suggesting that the Milberg and Winkler (2010, 2013) hypothesis is not empirically verified, at least when looking at all industries and countries. The foreign value added in final demand has also a very significant and positive coefficient. On the basis of these results, financialisation does not seem to be the consequence of globalisation but we need to further investigate industry dynamics to understand what explains these results.

5 Exploring industry dynamics

From the discussion in Sect. 2, we expect different results across the four groups of industries/countries described in Table 1. Moreover, financialisation has been mostly discussed in the context of developed countries. Distinguishing between

developed and emerging economies in our dataset should also provide contrasted results. Table 5 reports regression results for the four types of industry dynamics with in addition a dummy variable for emerging countries. For the labour demand, we use only the unconditional function to assess the overall impact of offshoring and financialisation. Table 9 in the appendix provides some information on the distribution of industries/countries across these categories. Both in the case of developed and emerging countries, industries tend to be evenly spread across the four dynamics. In the case of emerging economies, the distribution is however skewed towards the 'expansion' and 'protection' scenarii as these countries have higher growth rates and more of their industries have increasing employment.

Focusing on the main variables of interest for our analysis, the estimated coefficients for the IPR in the labour demand functions are all significant but have a different sign in the four groups of industries. This is expected as we have defined the categories on the basis of the increase or decrease in employment and financialisation. But still the econometric coefficients are interesting since we control for other variables in the estimation. When industries are in expansion, the IPR coefficient is positive. More employees are hired (or existing employees work more) and companies invest more, with less income allocated to shareholders. Shareholders can still benefit from a higher income since these industries are likely to increase their profits, but as a share of the gross operating surplus they receive less. The same happens in industries where there is more financialisation and less employment. The IPR and the number of hours worked increase together in this case.

In declining industries with sunk costs, more investment means less employment and a negative sign is also found for the 'protection' dynamic where both employment and financialisation increase together. The elasticity is however about half of the one observed when employment and financialisation go in the opposite direction. This is why overall we find that the IPR is positively correlated with employment in Table 3 and why financialisation is really associated with a decline in employment.

The offshoring index is not significant in any of the labour demand regressions. It was already weakly significant in the whole sample. It reinforces the conclusion that financialisation might be the phenomenon to look at rather than globalisation to explain jobs dynamics. Regarding the import penetration of foreign value added, an interesting result is that it is only significant in the "escape from production" dynamic which corresponds to industries where employment diminishes while financialisation increases. In this case, more competition from foreign products (higher foreign value added in final demand) leads to less employment. It suggests that the offshoring of final assembly activities might be more detrimental to jobs than the offshoring of inputs and highlights the importance of looking beyond inputs when analysing the impact of offshoring. The fact that the significant result is found in the "escape from production" dynamic could be interpreted, following Milberg's (2008) insight, as a characteristic of industries that really focus on saving costs by outsourcing and offshoring most of the manufacturing process while maintaining the most profitable activities in the domestic economy, possibly services (design,

Table 5 Regression results by type of industry dynamic

	Dep. variable: hours worked				Dep. variable: IPR			
	Expansion coef/se	Escape coef/se	Decline coef/se	Protection coef/se	Expansion coef/se	Escape coef/se	Decline coef/se	Protection coef/se
Wage/price of material inputs	−0.226***	−0.107***	−0.164***	−0.181***	0.279***	0.368***	0.252***	0.311***
	(0.046)	(0.015)	(0.033)	(0.047)	(0.081)	(0.080)	(0.061)	(0.073)
Capital stock	0.071***	0.099***	0.103***	0.102**	0.132*	−0.055	0.053	−0.018
	(0.026)	(0.013)	(0.019)	(0.049)	(0.076)	(0.063)	(0.072)	(0.087)
Price of gross output	0.258***	0.110***	0.121***	0.077				
	(0.055)	(0.032)	(0.046)	(0.050)				
Gross operating surplus					−0.117***	−0.218***	−0.167***	−0.168***
					(0.021)	(0.032)	(0.020)	(0.024)
Employment (hours)					0.635***	0.876***	−0.090	−0.033
					(0.176)	(0.146)	(0.151)	(0.123)
IPR	0.043***	0.040***	−0.022***	−0.020**				
	(0.012)	(0.006)	(0.005)	(0.008)				
Offshoring index	0.013	0.025	0.011	−0.003	0.188**	0.019	0.096*	0.054
	(0.017)	(0.017)	(0.018)	(0.021)	(0.073)	(0.061)	(0.055)	(0.063)
Foreign VA in final demand	−0.013	−0.033**	−0.019	0.023	0.041	0.204***	0.134*	0.216**
	(0.015)	(0.016)	(0.017)	(0.030)	(0.097)	(0.064)	(0.077)	(0.098)
Share of high skill labour	−0.027	0.016	0.025*	0.003	0.004	−0.054	−0.044	−0.041
	(0.020)	(0.013)	(0.013)	(0.011)	(0.042)	(0.038)	(0.042)	(0.065)
Revealed comparative advantage					0.019**	0.010	0.012	0.009*
					(0.009)	(0.018)	(0.010)	(0.005)
Emerging economy (dummy)	−0.003	−0.003	−0.002	0.010**	0.015	0.028	0.000	0.066***
	(0.003)	(0.004)	(0.005)	(0.004)	(0.016)	(0.020)	(0.020)	(0.015)

Table 5 continued

	Dep. variable: hours worked				Dep. variable: IPR			
	Expansion coef/se	Escape coef/se	Decline coef/se	Protection coef/se	Expansion coef/se	Escape coef/se	Decline coef/se	Protection coef/se
Number of observations	4147	3428	3318	3600	3584	3052	2930	3161
F	6.566	7.796	6.350	5.924	4.811	6.390	7.216	8.281
R^2	0.229	0.125	0.136	0.166	0.072	0.123	0.081	0.100
Adjusted R^2	0.225	0.120	0.131	0.161	0.067	0.116	0.074	0.094

Clustered standard errors in parentheses. Regressions in first difference. Constant and fixed effects not reported

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table 6 Regression results by type of country (developed vs. emerging economies)

	Conditional labour demand Developed	Conditional labour demand Emerging	Unconditional labour demand Developed	Unconditional labour demand Emerging	Investment profit ratio Developed	Investment profit ratio Emerging
Wage/price of material inputs	−0.280***	−0.313***	−0.194***	−0.269***	0.543***	0.340***
	(0.022)	(0.065)	(0.022)	(0.060)	(0.075)	(0.065)
Capital stock	0.184***	0.135***	0.185***	0.152***	0.093	0.020
	(0.024)	(0.026)	(0.029)	(0.028)	(0.069)	(0.081)
Gross output	0.490***	0.380***				
	(0.063)	(0.058)				
Price of gross output			0.138***	0.286***		
			(0.031)	(0.073)		
IPR	0.027***	0.023**	0.013***	0.024**		
	(0.004)	(0.011)	(0.004)	(0.011)		
Employment (hours)					0.447***	0.441***
					(0.078)	(0.139)
Gross operating surplus					−0.300***	−0.170***
					(0.020)	(0.032)
Offshoring index	−0.035**	−0.006	0.029*	0.017	0.240***	0.076
	(0.017)	(0.019)	(0.016)	(0.021)	(0.054)	(0.082)
Foreign VA in final demand	0.034*	0.028	−0.033**	−0.005	0.292***	0.270**
	(0.017)	(0.018)	(0.016)	(0.020)	(0.071)	(0.108)
Share of high skill labour	−0.002	−0.009	−0.002	−0.012	−0.010	−0.140*
	(0.006)	(0.045)	(0.006)	(0.048)	(0.027)	(0.080)
Revealed comparative advantage					−0.013	−0.014**
					(0.012)	(0.006)
Number of observations	11,165	3328	11,165	3328	9711	3016

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Table 6 continued

	Conditional labour demand Developed	Conditional labour demand Emerging	Unconditional labour demand Developed	Unconditional labour demand Emerging	Investment profit ratio Developed	Investment profit ratio Emerging
F	27.017	15.311	16.986	10.294	23.695	6.587
R^2	0.363	0.343	0.153	0.273	0.174	0.073
Adjusted R^2	0.362	0.339	0.151	0.268	0.172	0.066

Clustered standard errors in parentheses. Regressions in first difference. Constant and fixed effects not reported

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

marketing, branding, etc.) that require less foreign inputs. Their profit is then mostly redistributed to shareholders or financial assets rather than reinvested.

Looking now at the IPR regressions, the positive correlation between employment and the IPR is driven by two industry dynamics: 'expansion' and 'escape from production'. This is consistent with the labour demand regressions; the dominant trend is the association between more financialisation and less employment. The offshoring index has a positive and significant coefficient in two categories: 'expansion' and 'decline with sunk costs'. It could be expected in the case of expanding industries. Their offshoring activities should be dominated by a scale effect and being in expansion these industries invest more to produce more or maintain their competitive advantage (as investment is also in R&D activities to the extent that they are correctly classified as investment in the source data). It may be more of a surprise in the case of declining industries, but it suggests that offshoring in their case is an attempt to contain the decline and preserve their ability to cope with the necessity to invest in order to survive.

In all regressions, the dummy variable for emerging economies tends to be non-significant with the exception of the "protection" scenario. In this category, the dummy captures a specific impact on labour and the IPR for developing economies. All things being equal, these economies have more employment and more investment, which is consistent with their nature as emerging economies. We can however run separate regressions for developed and emerging economies to see the difference in terms of financialisation. Table 6 shows that the elasticity between financialisation and employment is higher in the case of emerging economies (unconditional labour demand). But financialisation has the same impact on employment (IPR regression). A difference between the two types of countries is found in the impact of the offshoring index. The variable is more significant in the case of developed countries across all the regressions. This result is consistent with the idea that developed countries are looking for cheaper labour inputs in emerging economies through the offshoring of inputs while offshoring in emerging economies is less about substituting foreign workers to domestic workers. The overall impact of offshoring remains nonetheless positive on employment in developed countries because of the scale effect (unconditional labour demand). Regarding the penetration of foreign value added in domestic final demand, significant coefficients appear only in the sample limited to developed countries and, in this case, the offshoring of final assembly (or more competition of foreign products) means lower employment levels. As previously mentioned, there is however a positive correlation between final assembly offshoring and the IPR.

6 Conclusion

The above analysis has not fully disentangled the complex relationships that exist between globalisation, financialisation and employment but it has shed light on some important avenues for future research.

The first important conclusion is that the emerging literature on the financialisation of economies has some bearing on the relationship between offshoring and

employment. We do not find empirical support for the Milberg and Winkler's hypothesis (2010, 2013) that some of the gains from offshoring are used for financialisation rather than for expanding output and employment, although descriptive statistics do not exclude this possibility. Moreover, our results do not suggest that the incidence of offshoring is affected by the level of financialisation. But there is a significant and strong correlation between financialisation and lower employment when controlling for offshoring. We also find that offshoring indices lose some of their significance when introducing financialisation as a demand shifter and based on the estimated coefficients the impact of financialisation on employment is stronger than the impact of offshoring. It suggests revisiting the literature on the relationship between offshoring and employment to account for financialisation at least as a control variable and to do further research to measure the impact of offshoring.

Another interesting conclusion from our work is that the offshoring of final assembly activities seems also to play a more important role than the offshoring of inputs (this time confirming an insight from Milberg and Winkler). Our proxy for this variable is however still imperfect and based on the new literature on trade in value added and global value chains, it might be possible to create a better indicator to further test the relationship and confirm this result.

This research brings also important indications for the understanding of financialisation defined as a reduction of the rate of reinvested earnings. First, this phenomenon is more important in developed countries than in emerging economies and should probably be put in perspective with long term development trajectories. More precisely, our analysis establishes that financialisation is not linked to an overall deterioration of the industry prospects in terms of output, demand and profitability and could thus not simply be defined as a process of reallocation of capital from declining sectors to sectors in expansion. To some extent, protection from competitive pressures from globalisation appears to give room to such corporate strategies.

Lastly, industry dynamics matter and future research on offshoring, employment and financialisation should focus even more on differences across industries. Using industry-level data is of course only a first step, as more analysis at the firm level would also be needed to bring more robust evidence, in particular to be more specific about the financialisation phenomenon and other dimensions of globalisation such as FDI and tax evasion strategies. The aggregate analysis presented in this paper should be regarded as a starting point.

Is labour the fall guy of a financial-led globalisation? We can provide a temporary answer which is that the first evidence does not point out to a financial-led globalisation but that labour is certainly impacted negatively through the financialisation observed in certain industries, maybe not so much in relation to offshoring but to other industry characteristics to be further investigated.

Appendix

See Tables 7, 8 and 9.

Table 7 List of industries

Code	Industry
1	Agriculture, forestry and fishing
2	Mining and quarrying
3	Food, beverages and tobacco
4	Textiles and textile products
5	Leather and footwear
6	Wood and products of wood
7	Pulp, paper, printing and publishing
8	Coke, refined petroleum and nuclear fuel
9	Chemicals and chemical products
10	Rubber and plastics
11	Other non-metallic mineral
12	Basic and fabricated metal
13	Machinery nec
14	Electrical and optical equipment
15	Transport equipment
16	Manufacturing nec and recycling
17	Electricity, gas and water supply
18	Construction
19	Sale and repair of motor vehicles
20	Wholesale trade
21	Retail trade
22	Hotels and restaurants
23	Inland transport
24	Water transport
25	Air transport
26	Auxiliary transport activities
27	Post and telecommunications
28	Financial intermediation
29	Real estate activities
30	Other business activities
Not incl.	Public administration
Not incl.	Education
Not incl.	Health and social work
Not incl.	Other community and social services
Not incl.	Private households with employed persons

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Table 8 Descriptive statistics for the variables used in the regressions

Variable	Number of obs.	Mean	SD	Min	Max
Employment (hours)	17,066	2763	23,348	0	608,141
Investment-profit ratio	16,157	0.61	10.60	−1243.78	106.43
Wage/price of material inputs	17,034	0.12	0.18	0.00	8.97
Capital stock	16,197	66,099	475,548	0	14,100,000
Gross output	17,066	47,151	130,301	0	2,252,490
Price of gross output/price of mat. inputs	17,066	1.02	0.34	0.16	20.58
Gross operating surplus/price of mat. inputs	17,066	85.16	381.87	−1461.89	8036.79
Offshoring index	17,036	0.15	0.12	0.00	0.82
Foreign VA in final demand	17,066	0.40	0.29	0.01	1.00
Share of high skill labour	17,066	0.16	0.12	0.00	0.79
Revealed comparative advantage	17,066	1.37	2.33	0.00	52.18

Table 9 Distribution of observations (industries/countries) across the four industry dynamics described in Table 1

	Developed countries			Emerging economies		
	Number of obs.	Share of employment (%)	Share of VA (%)	Number of obs.	Share of employment (%)	Share of VA (%)
Expansion	832	25.3	24.7	236	27.4	28.1
Escape	849	24.4	25.8	209	19.4	22.2
Decline	819	24.1	23.0	205	26.4	22.6
Protection	820	26.2	26.5	226	26.9	27.0

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