

Wage price spiral or price wage spiral?

The role of profits in causing inflation

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The notion that wage growth drives inflation in Australia is so widely accepted that even after 10 years of low wage growth and record profits the 5.1 percent inflation for March 2022, reported on 27 April, has been widely used to justify the need to not just restrain nominal wage growth but to cut real wages. In dismissing the suggestion that the minimum wage should rise just 5.5 percent Innes Willox, AI Group's CEO, declared:

“An increase in the minimum wages as demanded by unions would have adverse impacts on the economy, on unemployment, on underemployment and on sentiment, and would be a setback for many low-income households.”¹

Likewise, CEO of the Australian Chamber of Commerce and Industry Andrew McKellar, said:

“Imposing unaffordable wage increases on small business will cruel jobs, not create them. Any increase of 5% or more would inflict further pain on small business, and the millions of jobs they sustain and create. Small business cannot afford it.”²

While employer groups typically oppose calls for increases in the minimum wage regardless of whether inflation is high or low it is significant that the recent surge in inflation has been driven by a range of supply side factors including the impact of the pandemic on the supply of some materials, and the increase in the price of crude oil. This recent surge in inflation has taken place after a long period of low wage growth

¹ Karp (2022) *Industry warns 'small business can't afford it' after Albanese backs 5.1% minimum wage rise*, <https://www.theguardian.com/australia-news/2022/may/11/industry-warns-small-business-cant-afford-it-after-albanese-backs-51-minimum-wage-rise>

² Karp (2022) *Industry warns 'small business can't afford it' after Albanese backs 5.1% minimum wage rise*

and, indeed, after sustained calls from the Reserve Bank of Australia (RBA) and others for higher real wage growth. In short, wage growth played no significant role in the recent surge in inflation and, as the following analysis shows, maintaining real wages across the entire economy as distinct from merely maintaining the minimum wage in real terms would have a trivial impact on the price level even if firms seek to recoup all of a nominal wage rise as further price increases.

Leaving aside the inequity of expecting that, despite the profit share of GDP being at record highs, employees should bear the full burden of a supply side shock, as yet no evidence has been presented to support the assertion that a one-off increase in nominal wages to match a one-off (supply induced) surge in prices would have significant ongoing inflationary consequences. Put simply no evidence has been presented to support claims:

1. That all of the recent price increases reflect supply shocks rather than a combination of supply shock effects and price gouging;
2. That if nominal wages grew in line with the recent price shock (5.1 percent) that it would trigger a sustained increase in inflation;
3. That a 5.1 percent increase in wages this year would necessitate an increase in prices of anything like 5.1 percent next year.

The following paper is based on analysis of the Australian Bureau of Statistics (ABS) Input-output tables. These tables shed light on the relative proportion of input costs, such as labour, capital and intermediate inputs, across all industries and have been used to model an increase in all labour costs (as distinct from the minimum wage) of 5 percent.

The analysis presented below makes clear that because wages only account for, on average, 25.3 percent of the costs of Australian business there is no reason to expect that a five percent increase in wages could possibly drive price increases of anything like five percent. Needless to say, if only the minimum wage were to rise by five percent, then the impact on business costs would be much lower than that described below. Furthermore, the following analysis ignores labour productivity growth which means the flow on price impacts of a wage increase presented below will be higher than will likely arise as if there is any increase in labour productivity then the impact of a minimum wage rise on total labour costs would be even lower than the estimates provided.

Share of labour costs by industry

The ratio of wages and salary costs to a firm’s total costs can be referred to as the ‘labour intensity’ of output, or the labour/cost ratio. It is a measure of labour costs per dollar of output.

An analysis of the most recent ABS Input-output table for the Australian economy for 2018-19³ shows that the share of total costs attributable to labour across 114 Australian industries ranges from 3 percent for *Petroleum Refining* to 72 percent for *Other Services* and 71 percent for *Residential Care and Social Assistance Services*. Significantly, these labour costs include all labour related costs, not just wages which means that the results presented below will tend to exaggerate the impact of prices of a 5 percent increase in wages as not all on-costs will rise in proportion to wages. As mentioned above, the economy-wide average is 25.3 percent.

Table 1 shows the 10 industries with the highest labour/cost ratios and the likely impact of a five percent increase in wages on the total costs of each of those industries *assuming that there was zero labour productivity growth over the next year*.

Table 1: Ten most labour intensive industries and the impact on their costs of a 5% pay rise

Industry	Labour cost ratio	Cost pass through
Other services	71.9%	3.59%
Residential care and social assistance services	70.6%	3.53%
Primary and secondary education services	67.1%	3.36%
Employment, travel agency & admin services	57.8%	2.89%
Technical, vocational & tertiary education	55.9%	2.79%
Public order and safety	55.7%	2.79%
Health care services	51.8%	2.59%
Public administration and regulatory services	50.7%	2.54%
Clothing manufacturing	45.2%	2.26%
Defence	39.0%	1.95%

Source: Australia Institute analysis of ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*, <https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables>

Of the 114 industries classified by the ABS, those listed in Table 1 have the strongest case for arguing that they need to increase their prices to maintain the viability of their

³ ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*, <https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables>

company. That said, the fact that a firm is in an industry with a relatively high labour/cost ratio does not mean that they would face insolvency if they did not pass on all of the cost of a wage rise to their customers as a price rise. For example, while residential age care is among the most labour intensive industries in the country the recent Royal Commission into Age Care Quality and Safety found that many of Australia's for-profit aged care facilities are extremely profitable.⁴

It is important to note that only eight of Australia's 114 industries have a labour/cost ratio over 50 percent. As a result, even in the absence of any labour productivity growth, if the 107 industries with a labour/cost ratio of less than half were to pass on all of their increased labour costs as price increases then the resultant price increases would be comfortably below the RBA's target inflation range of 2-3.

It is also significant to note that many of the industries with the highest labour/cost ratio are either providers of government services or providers of services to government. While a five percent increase in the wage costs for the Army, the Department of Finance, a public school or a public hospital will have an impact on Commonwealth and state budgets, they will have no impact on inflation as the price of the 'output' for these services is set at zero.

At the other end of the spectrum, the impact of wage increases on some industries is so trivial that it approaches zero. Table 2 shows the 10 industries with the lowest labour/cost ratios⁵ and, in turn, the smallest impact of a five percent wage increase on their total costs. These industries with very low labour/cost ratios represent many of Australia's largest export industries and a significant share of Australia's largest companies.

⁴ Royal Commission into Aged Care Quality and Safety (2021) *Final report*, <https://agedcare.royalcommission.gov.au/>

⁵ Ignoring the industry of 'Ownership of Dwellings' which employs no labour and is largely a theoretical 'industry' used by the ABS to better measure the prices and costs of housing in the economy.

Table 2: Bottom 10 labour intensive industries

Industry	Labour cost ratio	Cost pass through
Petroleum and coal product manufacturing	2.87%	0.14%
Basic non-ferrous metal manufacturing	5.26%	0.26%
Gas supply	5.45%	0.27%
Oil and gas extraction	5.67%	0.28%
Sheep, grains, beef and dairy cattle	6.34%	0.32%
Iron ore mining	6.36%	0.32%
Electricity generation	7.09%	0.35%
Poultry and other livestock	8.25%	0.41%
Coal mining	8.62%	0.43%
Residential building construction	8.70%	0.43%

Source: Australia Institute analysis of ABS (2021) Australian National Accounts: Input-Output Tables, 2018-19 financial year

While the industries listed in Table 2 contain some of the largest companies in Australia, they are also among the industries that employ the least people. The oil and gas industry, for example, employs only 26,000 people while the coal industry employs only 35,000 of Australia's 13.4 million workers. Even if industries such as these were under commercial pressure to lift wages by five percent, with a resultant 0.28 percent increase in total costs suggested in Table 2, the impact of such price increases on Australia's inflation would be trivial due to the small number of actual employees and the fact that most of their output is exported and not included in the Australian Consumer Price Index.

Table 3 features a selection of industries that contain some of the largest employers and that supply some of the key components of the Consumer Price Index. Table 3 makes clear that the processing of meat, fruit, vegetables and milk are not very labour intensive, and would all experience an increase in direct labour costs of less than one percent if all wages paid in those industries (not just the minimum wage) were to increase by five percent. While retail trade and food and beverage services both have significantly higher labour/cost ratios than food processing both would experience an increase in costs of less than two percent, well within the ABS inflation target range, if all wages were to rise by five percent.

Based on the data provided in the ABS Input-output tables the cost of a \$4 soy latte at the local café might be expected to increase by around 7 cents if the café wanted to recoup the entire cost of their staff's five percent wage rise. Such a modest increase sits in stark contrast to suggestions that \$7 coffees may soon be on the way in Australia.

Table 3: Labour/cost ratio - selected industries of interest

Industry	Labour cost ratio	Cost pass through
Retail trade	38.80%	1.94%
Meat and meat product manufacturing	13.02%	0.65%
Fruit and vegetable product manufacturing	18.44%	0.92%
Dairy product manufacturing	12.71%	0.64%
Food and beverage services	35.01%	1.75%
Telecommunications	14.12%	0.71%
Banking and Finance	15.74%	0.79%
Electricity (distribution and retailing)	9.95%	0.50%

Source: Australia Institute analysis of ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*

Economy-wide impacts

Based on the ABS Input-output tables if there was a uniform five percent wage increase and all industries changed their prices to cover the subsequent increase in their wage costs the average economy-wide price increases would be just 1.27 percent. This figure is well below the RBA target range for inflation and, significantly, is based on the assumption that there is zero improvement in labour productivity in the coming year. Further, it is important to note that we have estimated the impact of a five percent increase in **all** wages rather than an increase in either the minimum wage or the other award wages that are linked to the minimum wage. If a five percent wage increase was confined to the minimum wage (and related awards) the impact on firms' costs would be well below 1.27 percent.

That said, the estimate that a five percent increase in wages would only increase firms' costs by 1.27 percent is only a 'first round' effect which means it only considers the direct impact of higher wages on the workforce of each industry. On an economy-wide basis, however, the impact of a five percent wage rise will be higher than the first round effects as, for example, a food retail business may not only have to pay higher wages for their staff, they may also have to pay higher prices for the food they sell due to the potential impact of higher wages in agriculture, food processing, transport and other services in their supply chain.

According to the ABS Input-output table, including these second round price effects would lead to an average economy-wide price increase of 1.85 percent. To put that into context, while the first round impact of a five percent wage rise on the cost of a \$4 soy latte was 7 cents, when the second round impacts are included the café's costs would likely rise by extra 2 cents to \$4.09.

Just as the first round impacts are likely overstated by our assumption that there will be no labour productivity growth in the next 12 months, both the first and second round estimates likely overstate the increase in costs associated with a five percent wage rise as we make no allowance for the ability of firms to substitute any inputs into their production as input prices rise. Similarly, we have not excluded the labour intensive government services which will not lift their prices above zero for a wide range of services no matter what happens to notional wages. Keeping in mind the likely upward bias of our estimated cost increases, Table 5 shows the ten industries likely to experience the highest cost increases when the second round effects of a five percent economy-wide wage rise are included.

Table 4: Top 10 price increases including second round effects

Industry	Labour cost ratio	Cost pass through
Residential care & social assistance services	70.6%	3.85%
Primary & secondary education services	67.1%	3.72%
Other services	71.9%	3.70%
Employment, travel agency & other admin	57.8%	3.42%
Technical, vocational & tertiary education	55.9%	3.35%
Public order & safety	55.7%	3.33%
Health care services	51.8%	3.13%
Public administration & regulatory services	50.7%	3.07%
Clothing manufacturing	45.2%	3.03%
Computer systems design & related services	37.78%	2.69%

Source: Australia Institute analysis of ABS (2021) Australian National Accounts: Input-Output Tables, 2018-19 financial year

As with the industries in Table 1, even when the second round impacts of wage increases are included the ten industries with the biggest increases in costs associated with a five percent wage increase are dominated by public sector services, many of which are supplied to Australians at zero price and, in turn, have no impact on the CPI.

At the other end of the spectrum Table 6 shows the 10 industries with the lowest estimated price increases as a result of a five percent economy-wide wage increase. As with Table 2, the industries which see the lowest increases in costs are the capital intensive, export oriented resource industries. That said, it is politically significant that the electricity generation and retail industries are among the industries with the smallest increase in costs as a result of wage rises.

Table 5: 10 smallest price increases including second round effects

Industry	Labour cost ratio	Cost pass through
Iron ore mining	6.36%	0.53%
Oil and gas extraction	5.67%	0.55%
Petroleum & coal product manufacturing	2.87%	0.62%
Gas supply	5.45%	0.68%
Poultry & other livestock	8.25%	0.77%
Coal mining	8.62%	0.85%
Basic non-ferrous metal manufacturing	5.26%	0.86%
Sheep, grains, beef & dairy cattle	6.34%	0.90%
Electricity transmission, dist. & retailing	9.95%	0.94%
Electricity generation	7.09%	0.95%

Source: Australia Institute analysis of ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*

Profit led inflation?

While most of the Australian debate about inflation relates to the role of wages, or perhaps fuel and transport costs, in reality the rising share of national income accruing to profits is a significant, and possibly the dominant, driver of price increases. As anyone who has seen the price of petrol vary over the course of a week knows, firms who have the ability to increase prices will often choose to do so, even when their costs are stable.

Talk of higher oil prices and higher wages gives firms with market power the opportunity to increase their prices well in excess of any actual increase in their costs and, in turn, significantly increase their profits. Firms talking about the need to increase their prices by five or more percent in response to a potential five percent increase in wages would be clear examples of such profiteering.

As shown above, because labour costs do not account for anywhere near 100 percent of the costs of any industry, it is not possible for a five percent increase in wage costs to lead to a five percent increase in the costs of production for any industry. In order to highlight the potential for firms to profiteer by exaggerating the impact of rising wages on their total costs, Table 6 provides the results of a scenario in which firms in different industries responded to a 5 percent wage increase with a 2.5 percent increase in prices.

As the average labour/cost ratio of all of Australian businesses is only 25.3 percent (well below the 50 percent that would be required to justify a 2.5 percent price response to a five percent increase in labour costs) an economy-wide 2.5 percent

increase in prices in response to an economy-wide five percent increase in wage costs would mean a significant increase in profit margins and a \$45 billion increase in profits across the Australian economy (an increase in the profit share of GDP from 23.1 percent to 23.7 percent).

Table 6 shows the 10 industries whose profit margins would rise the furthest if they responded to a 5 percent wage rise with a 2.5 percent price rise.⁶ Significantly, the industries with the highest potential to boost profits from exaggerating the impact of a five percent wage increase on their total costs include petrol, electricity generation, insurance and superannuation.

Table 6: Increase in profit margin

Industry	Old Profit Share	New Profit Share	Increase %	Increase \$m
Non-ferrous metal manufacturing	2.90%	5.01%	2.11%	\$1,017
Petroleum manufacturing	19.65%	21.47%	1.82%	\$554
Residential building construction	11.19%	12.93%	1.74%	\$2,007
Oils & fats manufacturing	11.09%	12.82%	1.73%	\$37
Grain mill & cereal prod. manufacturing	3.78%	5.46%	1.67%	\$109
Meat & meat product manufacturing	5.91%	7.57%	1.66%	\$609
Dairy product manufacturing	6.88%	8.53%	1.65%	\$261
Non-residential building construction	9.96%	11.61%	1.65%	\$1,148
Insurance & superannuation	8.00%	9.57%	1.57%	\$1,024
Electricity generation	22.00%	23.56%	1.56%	\$450

Source: Australia Institute analysis of ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*

While Table 6 shows how potentially profitable it is for an individual industry to increase their prices well above any actual increase in labour costs. If all industries adopt such an approach then the costs of all of the intermediate goods they purchase from each other will also rise, fuelling further inflation.

Table 7 shows what would happen to the prices charged by industries if the 'second round' effects of input prices rising by 2.5 percent are added to the direct impact of the original five percent wage rise. It shows that attempts by firms to extract an increased profit margin (by increasing prices by 2.5 percent even if their total wage costs had risen by less than that) leads to an increase in costs of well over 4 percent for

⁶ As shown in Table 1 a very small number of private companies with a labour/cost ratio over 50 percent would see a small reduction in their profits in this hypothetical scenario.

a range of manufacturing and construction industries that rely heavily on inputs from other industries.

Across the economy, Table 7 shows that after the second round impacts of input price increases are added to the first round impacts of a five percent wage rise the average price increase is estimated to be 3.73 percent,⁷ significantly higher than the 1.8 percent which would have resulted if firms had confined themselves to only passing on the actual increase in costs that a five percent increase in wages actually delivered.

Table 7: Top 10 Increase in prices, including second round effects.

Industry	Labour cost ratio	Cost pass through
Basic non-ferrous metal manufacturing	5%	4.78%
Grain mill & cereal product manufacturing	14%	4.53%
Meat and meat product manufacturing	13%	4.50%
Dairy product manufacturing	13%	4.48%
Residential building construction	9%	4.47%
Oils and fats manufacturing	9%	4.47%
Non-residential building construction	11%	4.45%
Railway rolling stock manufacturing	17%	4.45%
Petroleum and coal product manufacturing	3%	4.42%
Fruit and vegetable product manufacturing	18%	4.41%

Source: Australia Institute analysis of ABS (2021) *Australian National Accounts: Input-Output Tables, 2018-19 financial year*

⁷ The simplifying assumptions are:

1. Businesses accept a profit margin squeeze in the second round by accepting the same level of profit as the first round;
2. Distributors of imported goods join the game by upping their prices by 2.5 per cent so that all intermediate costs (irrespective of origin) increase by 2.5 per cent.

Assumption 1 lowers the estimated overall price impact. Assumption 2 tends to increase in the estimated overall price impact, but in reality some of this effect should have occurred in step 1 and the distribution of imports incurs wages costs and engages domestic businesses wanting to maintain profit margins.

While the assumptions are somewhat limiting, and a CGE model is not being used to trace all interactions, the key point is that lifting their prices on average more than suggested by their labour/costs ratio in order to increase profits, creates even greater overall cost increases through their intermediate costs channels from other industries. The end result being further price increases, a profit price spiral.

What would a five percent wage rise mean for individual firms?

While the data presented above is all based on industry wide averages and is forward looking it is possible to use the past annual reports of major companies to test the results on a firm by firm basis.

For example, Woolworths is a major Australian retailer with annual sales of \$55.7 billion, annual labour costs of \$8.4 billion and in 2021 an annual profit of \$2.2 billion before tax. If Woolworths were to increase all its labour costs by five percent it would lead to an increase in labour costs of \$430 million which would account for an increase in the firm's overall costs of 0.8 per cent. To put the potential impact of a \$430 million increase in wage costs into perspective, between 2020 and 2021 Woolworths profit (earnings before interest and tax) increased by \$797 million, from \$2,026 million to \$2,823 million. In short, firms like Woolworths would have still seen profit growth if they paid all of their workers a five percent pay rise and did not increase prices.

Likewise, the Commonwealth Bank of Australia (CBA) is Australia's largest bank with total assets of \$1,092 billion at 30 June 2021. In the year ended June 2021, the CBA's operating income was \$24.4 billion. Its costs: interest, operating expenses and loan impairment expenses, were \$18.9 billion. Staff expenses were \$6,048 million. If CBA's labour costs had increased by a further five per cent it would have led to an increase in labour costs of \$308 million which would account for an increase in the CBA's overall costs of 1.6 per cent. Again, putting the potential impact of a \$308 million increase in wage costs into perspective, between 2020 and 2021 CBA's profit (before tax) increased by \$1,997 million, from \$10,378 million to \$12,375 million. There is clearly scope for companies such as this to accommodate real wage maintenance and profit growth at the same time.

What if there is some productivity growth?

Based on the forecasts in the Commonwealth Budget and the long term average it is likely that there will be productivity growth of around 1.5 percent in the 2022-23 financial year. Indeed, it would be remarkable with labour shortages, rising fuel costs and supply chain disruptions if firms had not found new ways to do more with less in the last year than they had in the past decade.

As noted above, the modest impact on industry costs associated with a 5 percent wage rise estimated above do not factor in any offsetting savings from increased labour productivity, savings that would further reduce the impact of wage rises on firms' costs. That said, while there is no doubt that labour productivity growth will help

reduce the cost impacts associated with wage rises, determining the exact impact of productivity growth on costs at a firm and industry level is not straightforward using the method described above.

It is widely accepted that wages should, and usually do increase in line with productivity growth in the long run. While the mechanisms through which this occurs is debated among economists, historically the relationship has held for long periods of time across multiple countries. That said, if and when the relationship breaks down, for example when productivity growth is higher than real wage growth, the result is a steady increase in the profit share of GDP.

Productivity is harder to measure than it is to define. It is the relationship between the quantity of inputs and the quantity of outputs. Labour productivity at the national level is measure as the relationship between hours worked (input) and real GDP (output).

At the individual firm level, however, it is not as easily measured since the quantities of each can be difficult to measure. Similarly, for the purposes of this paper, it is important to recognise that an increase in labour productivity at the firm level will not necessarily result in lower absolute wage costs as an individual employer has a number of options regarding how to utilise increased productivity including one or more of the following:

1. An increase in output for the same number of workers.
2. A reduction in the number of workers and constant output.
3. An increase in the number of workers where output increases proportionally more.
4. An increase in intermediate costs, a rise in output and no change in the numbers of workers.

As an increase in labour productivity can impact the way that a firm uses a number of different factors of production, as well as the level of output itself, it is difficult to utilise the Input-output tables relied upon in this paper to fully model the likely movement in costs, prices and quantities of outputs produced by Australian industries. That said, all other things being equal, it is clear that an increase in labour productivity will result in lower labour/cost ratios across the economy.

This paper explicitly looked at the impact of increasing wage costs on total costs, keeping the quantity of output fixed. Including productivity growth into the calculations presented above would require the modelling of quantity changes that this modelling framework does not account for. A fully specified CGE model could more accurately model the interaction of wage increases and productivity gains at the industry and economy-wide level.

But while the interaction is complex it remains unquestionable that rising productivity means more output is produced per unit of labour input and without real wages growth of at least that rate the wages share in economy-wide income will continue to fall.

Conclusion

While significant concerns have been raised about the inflationary impacts of a five percent increase in the minimum wage, in reality the direct inflationary impact of a five percent increase in **all** wages is only 1.27 percent, and even when the second round impacts are included the increase in price level would likely only be 1.85 percent. To put these figures into context, they suggest that the direct impact of a five percent increase in wages on the price of a \$4 cup of coffee would be only 7 cents and, even after the second round impacts of increased input costs are included the price increase would only be 9 cents.

The reason that the direct and indirect impacts of wage increases on prices are so low is the fact that wages account for a relatively small portion of the total costs of Australian businesses.

While the estimates of the price impact of wage increases presented above are modest they are likely an overestimate as the Input-output table analysis did not allow firms to substitute away from higher cost inputs for lower cost inputs, and labour costs would be lower if trend rates of labour productivity growth were included. Further, as the industries that are the most labour intensive (and whose costs would rise the most) are dominated by government services for which the price is often set to zero, the economy-wide CPI impact of a price increase would be significantly lower than the figures presented above.

While economy-wide wage increases have a limited impact on prices, attempts by firms to use wage increases as an excuse to increase profit margins the impact of prices is far more significant. For example, if firms only pass on their actual increase in wage costs the impact on prices (after allowing for second round increases in input costs) is only 1.85 percent. Whereas if firms try to increase their prices by an average 2.5 percent in response to the 1.27 percent increase in total costs that would accompany a five percent increase in wage costs then (again after allowing for second round increases in input costs) the price level would increase by 3.73 percent.

In conclusion, given that an economy-wide increase in wages of five percent would have such a small impact on prices, the inflationary risks of a five percent increase in the minimum wage approaches the trivial. Indeed, the risk of firms exaggerating the

impact of wage increases on their costs in order to increase their profit margins seems far more significant. In short, it would seem that the ACCC has a bigger role to play in controlling Australia's inflation than the Fair Work Commission. The abuse of market power, and Australia's record profit share of GDP represent real threats to Australia's inflation and macroeconomic performance more generally.