How Do Changes in Global Shipping Costs Affect Australian Inflation?

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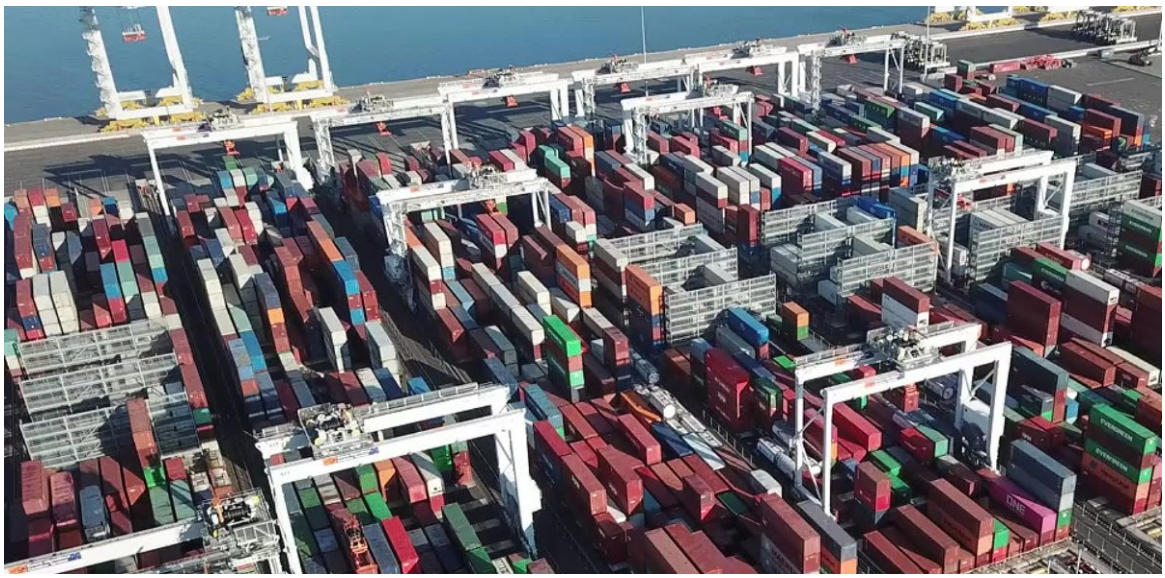

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Abstract

Australia's experience during the COVID-19 pandemic showed that developments in international shipping can have a significant effect on domestic inflation. This is because higher global shipping costs can flow through the supply chain for imports and increase costs for Australian firms, who can in turn pass on those higher costs to consumers. This article addresses the question of when and how unexpected changes in global shipping costs have tended to pass through to Australian consumer price inflation since 2003. It finds that the pass-through to 'shippable' goods inflation can be material, and that shocks to global shipping costs were large enough to have contributed materially to trimmed mean inflation during the pandemic. That said, there is substantial uncertainty around the estimated pass-throughs, particularly because excluding the pandemic period leads to much smaller and less precise estimates of the pass-through to trimmed mean inflation.

Introduction

Over recent years, the global shipping market has been hit by several large shocks that have significantly affected the cost of ocean freight. Higher shipping costs can increase consumer prices in Australia if importers pass on higher freight prices or upstream cost pressures to consumers, or if lower import volumes lead to higher prices for domestic alternatives. Given that the cost of freight services as a share of total Australian import values doubled to around 7 per cent during the COVID-19 pandemic (ABS 2023),[1] shipping cost shocks have the potential to materially increase costs for Australian firms that rely on imports. As such, quantifying the pass-through of shipping costs to consumer prices in Australia can help to inform the RBA's assessment of the outlook for domestic inflation. This article examines the extent to which shocks to global shipping costs tend to pass through to Australian inflation.

The article first discusses how the balance of supply and demand for shipping services has contributed to recent episodes of elevated shipping costs. Second, it discusses the channels through which higher shipping costs can flow through to Australian consumer price inflation. Third, it presents estimates of the average pass-through of shocks to global shipping cost inflation to Australian consumer price inflation. Finally, it presents estimates of the contributions of shipping cost shocks to trimmed mean inflation during the pandemic.

Recent episodes of elevated shipping costs

A shipping operator can charge a cargo owner either:

- a **spot rate** for a one-time, on-demand request to move cargo; or
- a **charter rate** that is agreed upon in advance and fixed for a term of up to two years.

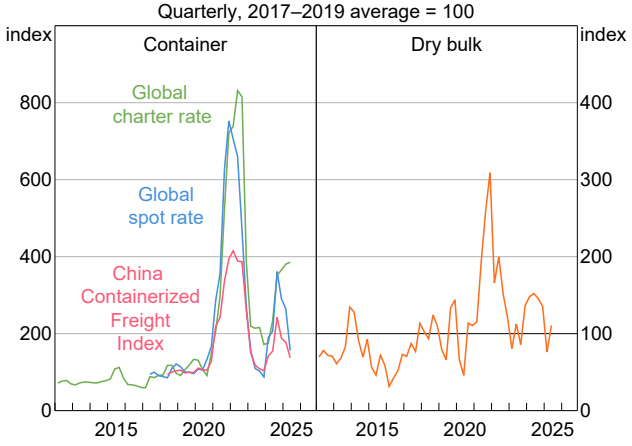
Changes in charter rates tend to lag changes in spot rates, which vary daily based on conditions in the global shipping market.

Movements in global shipping costs are driven by the relative balance of supply and demand for shipping services. Shipping costs increase when demand for shipping increases without an offsetting increase in shipping capacity. Conversely, an increase in global shipping capacity without an offsetting increase in shipping demand can put downwards pressure on shipping costs.

Global shipping costs were relatively stable in the decade leading up to the start of the pandemic in 2020. However, since then, there have been several large shocks to the demand for and supply of shipping that have led to unprecedented fluctuations in global shipping costs (Graph 1):

- **COVID-19 pandemic (2020–2022):** Widespread lockdowns and travel restrictions severely reduced the number of ships available to transport cargo. At the same time, limited opportunities to consume services due to lockdowns and travel restrictions drove a strong increase in goods demand and therefore container demand. Over this period, some measures of shipping costs increased to around eight times their pre-pandemic levels.
- **Reduced water levels in the Panama Canal (2023–2024):** Around 5 per cent of global maritime trade volumes pass through the Panama Canal each year. Extreme drought reduced the number of ships that were able to pass through each day by around 30 per cent. This decline in global shipping capacity contributed to a 50 per cent increase in dry bulk shipping costs in 2023.
- **Red Sea conflict (October 2023 onwards):** Conflict in the Red Sea prevented container ships from safely passing through the Suez Canal (a major transit point for ships travelling between Europe and Asia). Many ships along that route were forced to divert around Africa, increasing transit times by around 30 per cent and reducing the number of voyages that those ships could make per year. Given that around 15 per cent of global maritime trade volumes normally passes through the Suez Canal each year (Kamali *et al* 2024), the effect of these diversions was to reduce global shipping capacity by around 5 per cent. When this coincided with importers placing Christmas orders earlier than usual from April to August 2024, global container rates increased to nearly four times their 2019 average.

Graph 1
Global Shipping Costs*
Quarterly, 2017–2019 average = 100



* Global spot rate measured using Freightos Baltic Index. Global charter rate measured using Harpex Petersen Charter Rates Index. Dry bulk rate measured using Baltic Exchange Dry Index.

Sources: LSEG; RBA; Shanghai Shipping Exchange.

There are a range of indicators available that measure the cost of shipping, each of which captures a different aspect of the costs faced by businesses globally. This article uses the China Containerized Freight Index (CCFI) – a measure of the weighted average cost of shipping a container from ports in China to various destinations around the world – to measure the change in the global shipping costs.[2] The main benefit of using the CCFI is that China is Australia's largest source of imports, meaning that this index is likely to have the most significance for the cost structure of Australian imports compared with other more global measures of shipping costs.

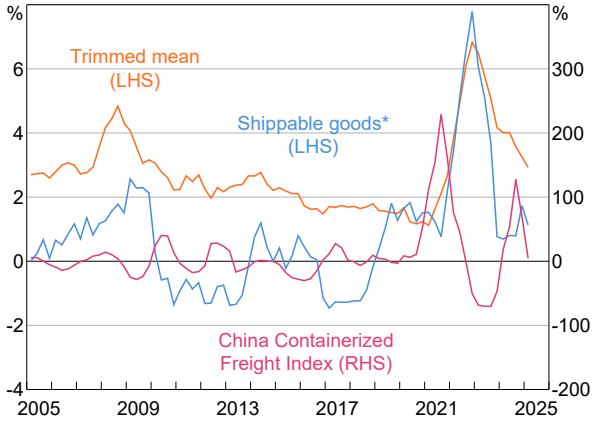
The link between global shipping costs and domestic inflation

Higher global shipping costs can increase the costs associated with importing goods, which Australian firms may pass on to consumers. One reason for this is that Australian importers may need to pay higher freight costs to have goods shipped to Australia. Higher global shipping costs can also increase input costs for Australian firms that rely on imported inputs or sell imported goods, especially those that are produced using international supply chains. For example, an Australian firm may import phones produced in China that require parts to be shipped from Japan. Producers at each stage of the supply chain may pass on some proportion of an increase in global shipping costs, resulting in higher import prices for the Australian firm ultimately selling the phone to consumers in Australia.

Further, in response to imported goods becoming more expensive, Australian households and businesses may substitute towards domestically produced goods (where available). At first instance, this could dampen the direct pass-through of higher shipping costs to the Australian economy. However, without an offsetting increase in the domestic supply of goods, the increase in demand could lead to higher prices for domestically produced goods. The indirect pass-through of higher shipping costs to domestic inflation through this channel could be significant, as there can be long lags in ramping up domestic supply.

During the pandemic, global shipping costs increased dramatically from late 2020 and remained elevated until the end of 2022 (Graph 2). The significant increase in the cost of these freight services reflected a combination of supply-side disruptions in shipping from lockdowns and travel restrictions, as well as a strong increase in the demand for traded goods as consumers substituted away from services due to pandemic-related restrictions on activity (Bishop, Boulter and Rosewall 2022; Beckers, Hambur and Williams 2023). There was limited scope for global shipping supply to ramp up quickly to meet higher demand because cargo ships take between one to two years to build. Domestic inflation in Australia began to increase around 6–12 months later, reaching a peak in late 2022 (Graph 2).

Graph 2
Inflation
Year-ended



* Tradable goods less volatile goods, alcohol, tobacco, gas, overseas travel, therapeutic goods, and goods with administered or regulated prices.

Sources: ABS; RBA; Shanghai Shipping Exchange.

The sharp increase in Australian inflation during this period cannot be entirely explained by increases in shipping costs. Indeed, it is likely that changes in global demand and supply during the pandemic described above simultaneously affected shipping costs and Australian inflation. Disentangling the inflation impact of changes in global shipping costs from the inflation impact of changes in global demand and supply during the pandemic is a key challenge, as discussed below.

Estimating the pass-through of shipping costs to Australian inflation

I used a local projections model to estimate the average pass-through from shocks to global shipping cost inflation to different measures of Australian consumer price inflation since 2003. This approach follows the literature on this topic (Jordà 2005; Carrière-Swallow *et al* 2023).[3] I included observations from the pandemic as this period contains important variation that helps to identify the relationship between global shipping costs and Australian inflation.

The main benefit of using a local projections model is that it can directly estimate the impact of a global shipping cost shock on Australian inflation because Australia is a small open economy that does not have sufficient market power to affect global shipping prices (Carrière-Swallow *et al* 2023). The model also controls for many factors unrelated to shipping that could affect Australian inflation, such as the Australian output gap and the world food price.

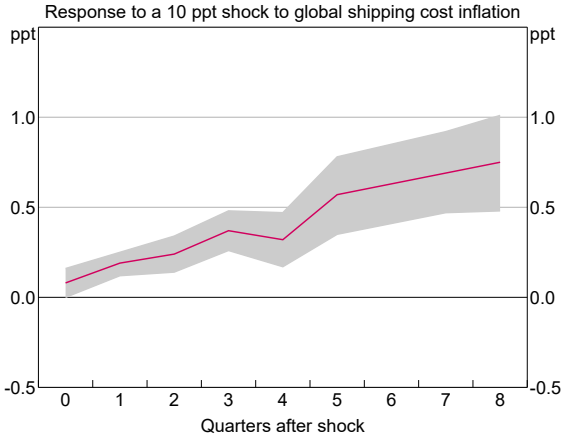
As discussed above, a key challenge for estimating the pass-through of global shipping cost shocks to Australian inflation is that changes in global demand or supply outside of the global shipping market could simultaneously affect both shipping costs and Australian inflation. Failing to control for these kinds of changes in global demand or supply – particularly during the pandemic – might lead us to overestimate or underestimate the impact of global shipping costs on Australian inflation. I address this issue by controlling for the output gap across advanced economies (a proxy for global supply and demand) and the change in oil prices (a proxy for global supply), in line with the literature (Carrière-Swallow *et al* 2023).

For further details on my modelling approach and assumptions, see Appendix A.

Pass-through to Australian consumer price inflation

First, I considered how higher shipping costs affect the prices of a smaller subset of 'shippable' goods in the CPI basket that are more likely to arrive in Australia by ocean freight.[4] I found that a 10 percentage point shock to global shipping cost inflation increases shippable goods inflation in Australia by around 0.4 percentage points after one year and around 0.75 percentage points after two years (Graph 3). This suggests that global shipping cost shocks tend to flow through to Australian inflation with a lag. That said, the estimates have reasonably wide uncertainty bands, which imply that the pass-through could be between 0.4 to over 1 percentage points after two years.

Graph 3
Shippable Goods Inflation*
Response to a 10 ppt shock to global shipping cost inflation

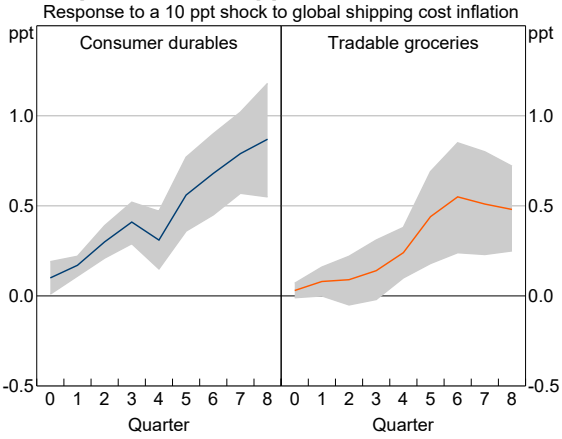


* Tradable goods less volatile goods, alcohol, tobacco, gas, overseas travel, therapeutic equipment, and goods with administered or regulated prices. Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.

Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

The next two measures of inflation I tested with the model were for subsets of shippable goods – consumer durable goods and tradable groceries, which make up around two-thirds and one-third of the basket of 'shippable' goods, respectively (Graph 4). This gives us a sense of what kinds of consumer products are most likely to experience price increases following a shock to global shipping costs. I found that the response of shippable goods inflation to the shock is driven mainly by higher inflation in consumer durables, where pass-through is much larger. I found that inflation for consumer durables increases by around 0.8 percentage points two years after the shock, whereas the pass-through to inflation for tradable groceries peaks at around 0.5 percentage points after 1.5 years.

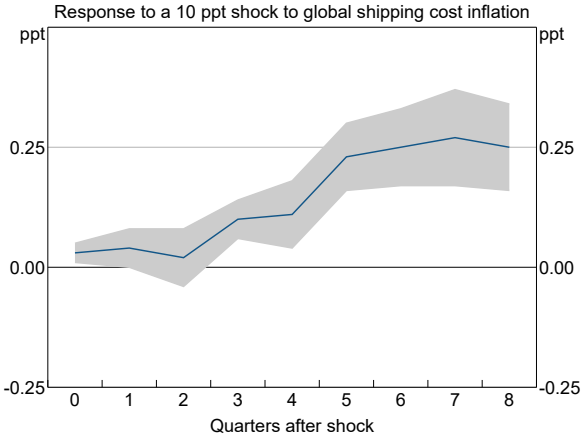
Graph 4
Components of Shippable Goods Inflation*
Response to a 10 ppt shock to global shipping cost inflation



* Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

Finally, I tested whether shocks to global shipping costs have an impact on inflation in the broader CPI basket by estimating the response of trimmed mean inflation to shocks to global shipping costs (Graph 5).[5] I found that the average pass-through of a 10 percentage point shock to global shipping cost inflation to trimmed mean inflation is around 0.1 percentage points after one year and 0.25 percentage points after two years. These estimates are consistent with the results in Carrière-Swallow *et al* (2023), who found an average pass-through to headline inflation of 0.15 percentage points after 1.5 years across a sample of over 100 economies.[6]

Graph 5
Trimmed Mean Inflation*
Response to a 10 ppt shock to global shipping cost inflation



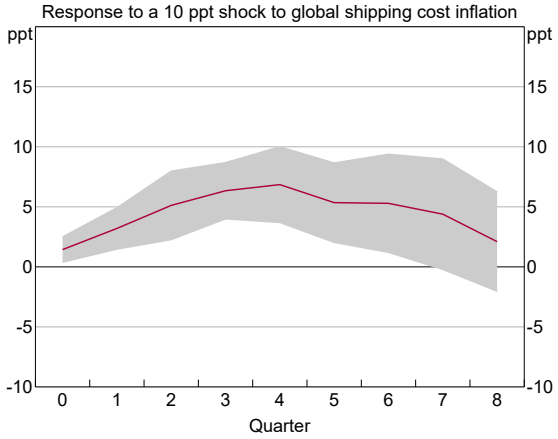
* Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

How do higher global shipping costs flow through the supply chain for Australian imports to affect Australian CPI inflation?

Having found that increases in global shipping costs tend to put upwards pressure on Australian CPI inflation, I then looked more closely at how that effect works through the imports supply chain. I first estimated how Australian shipping costs respond to higher global shipping costs. Second, I estimated the impact of higher shipping costs on the price and volume of goods imports (noting that freight is a service and so does not contribute directly to goods import volumes or prices).

I found that around three-quarters of the shock to global shipping costs passes through to Australian freight services inflation after two quarters and this effect persists for around 1.5 years (Graph 6). The lag and persistence of the effect could be explained by the tendency for most Australian importers to lock in freight prices ahead of time under fixed-term contracts. For those importers, overseas developments in global shipping do not flow through to affect their Australian freight prices until their contracts are renegotiated, and higher prices are then locked in for the full term of the new contract.

Graph 6
Inflation – Australian Freight Services Costs*
Response to a 10 ppt shock to global shipping cost inflation



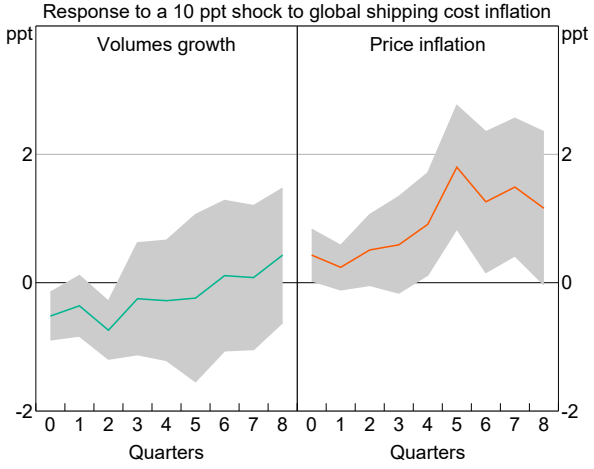
* Year-ended change in the ABS BOP Services Debits Freight Transportation Implicit Price Deflator. Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

In response to higher global shipping costs, overseas exporters could plausibly raise their export prices to cover higher upstream freight costs. To determine whether this adds to upstream cost pressures for Australian importers, I used a measure of goods import price inflation that excludes the cost of freight between

the exporting country and Australia. The pass-through I estimated here captures the indirect impact of global shipping costs on import prices received by Australian firms, rather than the direct impact on the cost of freight services to Australia (estimated above). I found that goods import price inflation increases temporarily by up to 2 percentage points for one year after a 10 percentage point shock to global shipping cost inflation (Graph 7). This suggests that overseas exporters do tend to pass on higher upstream freight costs at earlier points in the global supply chain through higher export prices.

By contrast, I found that import volumes growth on average does not tend to respond to a shock to global shipping cost inflation (Graph 7). However, the inclusion of the pandemic – a period where import volumes were extremely volatile – may have affected the results (see below). Further, during the pandemic, strong increases in shippable goods inflation alongside domestic goods inflation could have reduced the incentive for consumers to substitute away from imported goods, which could also explain the limited response of goods import volumes to a shipping cost shock.

Graph 7
Goods Imports*
Response to a 10 ppt shock to global shipping cost inflation



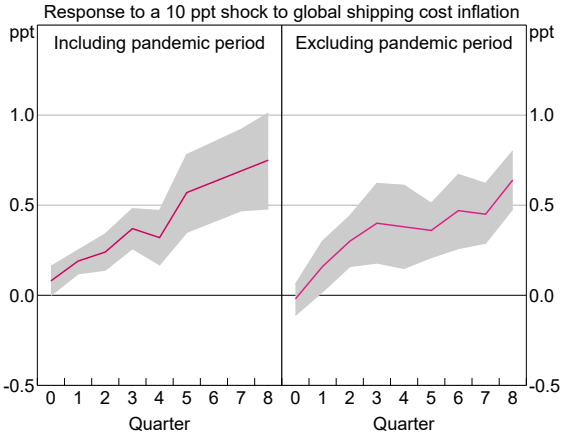
* Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

Have shipping costs affected Australian inflation outside of the COVID-19 pandemic?

As discussed above, changes in global demand or supply outside of the global shipping market could simultaneously affect both shipping costs and Australian inflation. This was especially the case during the pandemic period, which contained the largest increases in shipping costs and Australian inflation in the sample. To check the robustness of my results to the inclusion of the pandemic period, I dropped observations from 2020 to 2022 and re-estimated the pass-through from shipping cost shocks to Australian inflation.

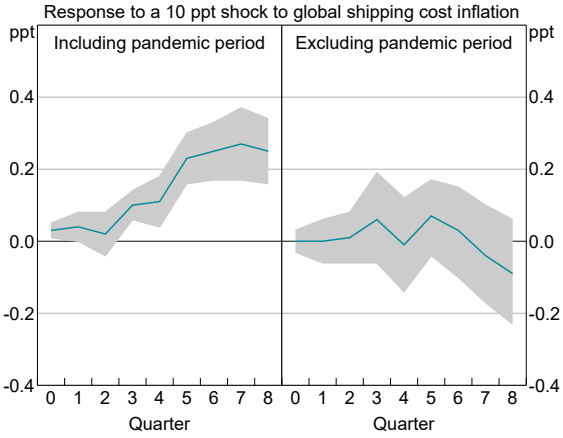
I found that the pass-through to shippable goods inflation is roughly similar once observations from the pandemic are excluded (Graph 8), but that the pass-through to trimmed mean inflation is much smaller in size and less sustained (Graph 9). This suggests that shocks to global shipping costs have had only a limited pass-through to prices of the broader CPI basket in 'normal' times outside of the pandemic.

Graph 8
Shippable Goods Inflation*
Response to a 10 ppt shock to global shipping cost inflation



* Tradable goods less volatile goods, alcohol, tobacco, gas, overseas travel, therapeutic equipment, and goods with administered or regulated prices. Shaded area represents 95 per cent confidence intervals constructed using HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

Graph 9
Trimmed Mean Inflation*
Response to a 10 ppt shock to global shipping cost inflation

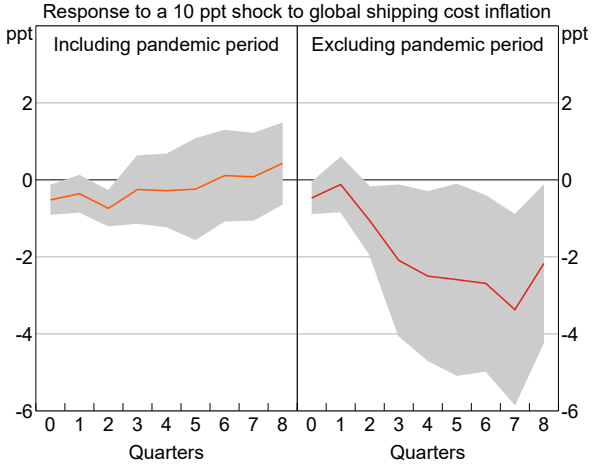


* Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

There could be several explanations for this. On the one hand, this result could indicate that my baseline estimates of the pass-through to trimmed mean inflation are biased because they inadvertently capture the impact of other kinds of shocks during the pandemic, even after controlling for proxies for global supply and demand.

On the other hand, the muted response of trimmed mean inflation outside of the pandemic could be explained by Australian consumers being able to substitute away from more expensive imported goods – for example, towards services – in more 'normal' times, which was not possible during the pandemic due to activity restrictions. This substitution towards services would dampen the pass-through from higher shipping costs to broader measures of inflation that include services, such as trimmed mean. The idea that Australian consumers substitute away from shippable goods when shipping costs are high is also consistent with my finding of a strong negative response of goods import volumes once I excluded the pandemic period (Graph 10). Further, the sub-components of shippable goods – consumer durables and tradable groceries – were generally more prone to being trimmed out of trimmed mean CPI inflation outside of the pandemic period.

Graph 10
Goods Imports – Volumes Growth*
Response to a 10 ppt shock to global shipping cost inflation



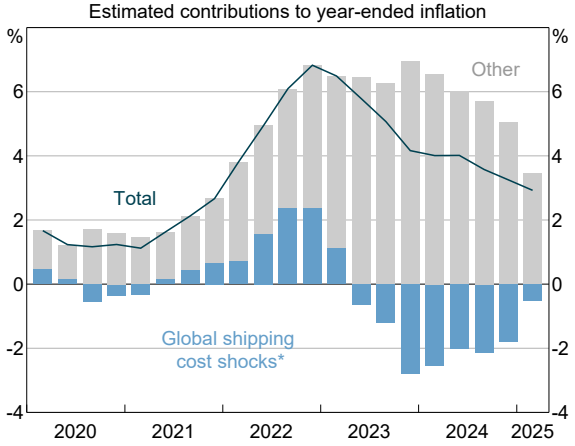
* Shaded area represents 95 per cent confidence intervals constructed using Newey-West HAC standard errors.
Sources: ABS; FAO; IMF; RBA;Shanghai Shipping Exchange.

On balance, the differing estimates of pass-through to trimmed mean inflation with and without the pandemic in the sample suggest that it is much more ambiguous whether higher global shipping costs tend to pass through to broader measures of CPI inflation like trimmed mean. In light of this, the full-sample estimates of pass-through to trimmed mean CPI inflation should loosely be considered an upper bound of the possible impact of global shipping cost shocks.

Quantifying the impact of recent movements in global shipping costs on Australian inflation

To provide a sense of how much global shipping cost shocks contributed to Australian inflation during the pandemic, I used my model to calculate their contribution to trimmed mean CPI inflation since 2020.[7] Presented below are contributions calculated using my full-sample estimates of the pass-through to trimmed mean, though it should be noted that the resulting contributions are subject to substantial uncertainty and could be larger or smaller than estimated (Graph 11).

Graph 11
Trimmed Mean Inflation
Estimated contributions to year-ended inflation



* Calculated using passthroughs estimated using full sample that includes the COVID-19 pandemic. While the underlying point estimates are statistically significant, there remains substantial uncertainty around these estimates, particularly because excluding the pandemic period leads to much smaller estimates of the passthrough of shipping costs to trimmed mean inflation.
Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

During the pandemic, the year-ended change in the CCFI was over 200 per cent at its peak in 2021, alongside peak increases in trimmed mean CPI of around 6 per cent in late 2022. My estimates of the pass-through from above suggest that the peak impact of global shipping cost shocks on trimmed mean inflation over the pandemic was around 2 percentage points in 2022.

The estimated contributions suggest that movements in global shipping costs have largely been disinflationary from 2023 onwards, which could reflect the significant easing in global shipping costs over that period as goods demand normalised and shipping capacity expanded. That said, factors other than declining shipping costs have almost certainly contributed to disinflation from 2023 onwards (RBA 2025).

While the CCFI increased in year-ended terms by up to 75 per cent in late 2024, subsequent reversals in global shipping costs as container demand eased and new global shipping capacity coming online have likely contributed to there being a limited impact on trimmed mean inflation in 2025 so far.

Conclusion

This article finds evidence of a material pass-through from increases in global shipping costs to the prices of 'shippable' goods in Australia, in line with the existing literature. However, evidence of a pass-through to broader measures of CPI inflation such as trimmed mean is less clear. While the average pass-through to trimmed mean CPI inflation since 2003 is material, that pass-through is much smaller and not statistically significant when the pandemic period is excluded from the sample.

The difference in these results could reflect bias from the simultaneous effect of global demand and supply shocks on global shipping costs and Australian inflation; this might suggest that there is little pass-through of shipping cost inflation to trimmed mean CPI inflation in 'normal times'. However, there are other plausible explanations, such as consumers being able to substitute away from shippable goods towards services outside of the pandemic period. On balance, the full-sample estimates of pass-through to trimmed mean inflation presented in this article should loosely be interpreted as an upper bound of the possible impact of global shipping cost shocks.

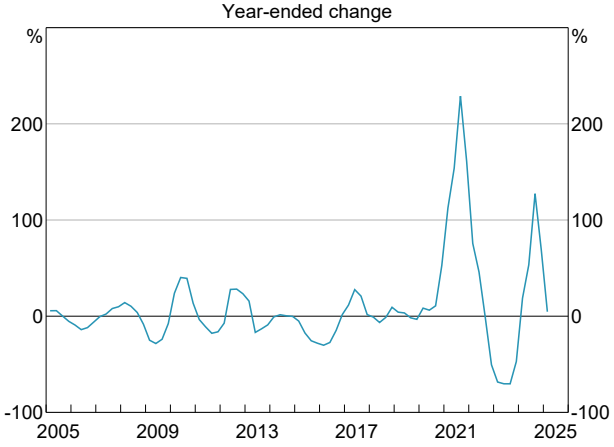
Appendix A: Modelling approach and assumptions

Measure of global shipping costs

I measured fluctuations in global shipping costs using the year-ended change in the CCFI. The CCFI measures the weighted average cost of shipping a container from ports in China to various destinations around the world, using a combination of both spot and charter rates.

The CCFI is available from 2003 to the March quarter of 2025. To create a measure of the year-ended change in global shipping costs, I calculated the quarter average of the CCFI to align with the frequency of the inflation data and calculated the year-ended change (Graph A1).

Graph A1
China Containerized Freight Index
Year-ended change



Sources: LSEG; RBA; Shanghai Shipping Exchange.

Global shipping costs can fluctuate seasonally, which could possibly bias our estimates of the pass-through to Australian inflation. For example, container rates for routes out of China and east Asia tend to be higher from May to August as this is the typical time for importers to place orders for stock in time for Christmas. My model is estimated in terms of year-ended changes, which should limit the impact of any seasonality in global shipping costs. Further, I seasonally adjusted the CCFI, calculated the year-ended change and re-estimated the model and found no statistically significant differences.

Model

I followed the modelling approach in Carrière-Swallow *et al* (2023). I estimated the response β^h of 'shippable' goods inflation π_t in the $h = 0, \ \ldots \ , 8$ quarters after a shock to global shipping cost inflation s_t in quarter t using a local projection (Jordà 2005; Carrière-Swallow *et al* 2023).

In equation form:

$$\pi_{t+h} = \alpha^h + \beta^h s_t + \sum_{k=1}^{4} \gamma_k^h \pi_{t-k} + \sum_{k=0}^{4} \boldsymbol{\theta_k^h X'_{t-k}} + \sum_{k=1}^{4} \boldsymbol{\vartheta_k^h Y'_{t-k}} + \varepsilon_{t+h}^h$$

I scaled β^h to represent the percentage point response of year-ended inflation h quarters after a 10 percentage point increase in year-ended global shipping cost inflation. I focused on year-ended changes and included four lags of each variable and the controls per the modelling approach in Carrière-Swallow *et al* (2023). The vector $\boldsymbol{Y'_{t-k}}$ includes lags of Australian inflation and global shipping cost inflation. The vector of controls $\boldsymbol{X'_{t-k}}$ consists of the following variables:

- the year-ended change in the Brent crude oil price
- the year-ended change in the world food price
- the year-ended change in Australia's goods terms of trade
- the Australian output gap
- the IMF measure of the advanced economies output gap.

I presented my results with 95 per cent confidence intervals constructed using Newey-West heteroskedasticity and autocorrelation consistent (HAC) standard errors. This allows the model to account for possible heteroskedasticity and autocorrelation introduced by using year-ended growth rates in a regression estimated on quarterly data.

Checking for reverse causality

One issue with estimating a causal impact of shipping cost shocks on inflation is that there could be reverse causality because Australian shipping costs are also likely to be responsive to Australian inflation. For example, weaker goods demand that flows through to weaker inflation could also reduce demand for imported goods, demand for shipping and in turn shipping costs.

To deal with the possibility of reverse causality, I focused on the impact of global (rather than Australian) shipping costs on Australian inflation, following the approach of Carrière-Swallow *et al* (2023). Because Australia is a small open economy, Australian economic conditions and inflation do not have the power to affect global shipping costs. This means that changes in Australian inflation should not induce changes in global shipping costs.

To check that changes in Australian inflation do not cause changes in the CCFI, I regressed the year-ended change in the CCFI on the Australian output gap. I found no statistically significant response of the CCFI to the Australian output gap at any horizon, which provides evidence that the CCFI is exogenous to changes in Australian economic conditions.

Checking for any non-linearities in the pass-through of shipping costs to Australian inflation

Larger shocks to shipping costs could plausibly result in higher rates of pass-through to domestic inflation. For example, during relatively smaller shocks to shipping costs, firms may be more able to absorb higher costs or can draw down on inventories to make up for lower import volumes. I checked for possible non-linearities by introducing a quadratic term into my model:

$$\pi_{t+h} = \alpha^h + \beta^h s_t + \varphi^h Sign(s_t) \cdot s_t^2 + \sum_{k=1}^{4} \gamma_k^h \pi_{t-k} + \sum_{k=0}^{4} \boldsymbol{\theta}_k^h \boldsymbol{X'}_{t-k} + \sum_{k=1}^{4} \boldsymbol{\vartheta}_k^h \boldsymbol{Y'}_{t-k} + \varepsilon_{t+h}^h$$

The coefficient φ^h captured possible non-linear effects from large fluctuations in global shipping costs. I found that the non-linearities are not statistically significant at any horizon, even when the pandemic period is excluded.

Appendix B: Calculating the basket of 'shippable' goods

I arrived at the subset of 'shippable' goods as follows:

1. I started with the basket of tradable goods in the CPI basket. This excludes components of the CPI basket such as housing and market services.
2. I then removed any volatile goods (fruit, vegetables, tobacco and automotive fuel), administered or regulated goods (such as pharmaceuticals), any goods that cannot be transported by ship, and overseas travel.
3. The resulting basket of 'shippable' goods is around 25 per cent of the CPI basket and can be split further into two sub-categories – consumer durables and tradable groceries (Table B1).

Table B1: Shippable Goods

Consumer durables ⅔ of shippable goods	**Tradable groceries** ⅓ of shippable goods
Garments	Cakes and biscuits
Footwear	Breakfast cereals
Accessories	Other cereal products
Furniture	Beef and veal
Carpets and other floor coverings	Lamb and goat
Household textiles	Other meats
Major household appliances	Fish and other seafood
Small electric household appliances	Cheese
Glassware, tableware and household utensils	Ice cream and other dairy products
Tools and equipment for house and garden	Jams, honey and spreads
Cleaning and maintenance products	Food additives and condiments
Personal care products	Oils and fats
Other non-durable household products	Snacks and confectionary
Motor vehicles	Other food products
Spare parts and accessories for motor vehicles	Coffee, tea and cocoa
Audio, visual and computing equipment	Waters, soft drinks and juices
Audio, visual and computing media and services	
Books	
Newspapers, magazines and stationery	
Equipment for sports, camping and open-air recreation	
Games, toys and hobbies	

Sources: ABS; RBA.

Appendix C: Estimating contributions from global shipping costs to Australian CPI inflation

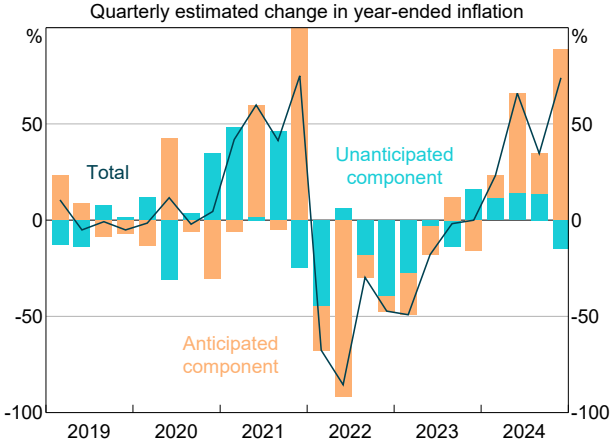
I estimated contributions from shocks to global shipping costs to trimmed mean inflation as follows:

1. To isolate the unanticipated change in global shipping costs, I regressed the CCFI on the controls in my model. The residuals from this regression represent unanticipated 'shocks' to global shipping costs that cannot be explained by the controls in my model (Graph C1).
2. I calculated the contribution of the shock in each period to trimmed mean inflation at each subsequent horizon, using the pass-through estimates presented in the article. I used the pass-throughs estimated from the full sample that includes the pandemic period.
3. For each quarter I then summed those contributions from each of the shocks in prior periods to estimate the overall contribution of shipping costs to trimmed mean inflation.

Graph C1

Global Shipping Cost Inflation*

Quarterly estimated change in year-ended inflation



* Components estimated using a sample period that includes the pandemic.

Sources: ABS; FAO; IMF; RBA; Shanghai Shipping Exchange.

Endnotes

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1 This figure includes the cost of both ocean and air freight. Around 85 per cent of all Australian freight is transported by ocean rather than by air (BITRE 2023).

2 The CCFI is calculated using a combination of both spot and charter rates.

3 Other central banks have used a similar approach to estimate the impact of higher shipping costs on domestic inflation. See, for example, Sly *et al* (2016); Attinasi, Bobasu and Gerinovics (2021); Vehbi *et al* (2022); RBNZ (2024).

4 I arrive at this subset of 'shippable' goods by removing from the CPI basket any volatile goods, administered or regulated goods, and any goods that cannot be transported by ship. The resulting basket of 'shippable' goods is around 25 per cent of the CPI basket. For further details, see Appendix B for a breakdown of shippable goods.

5 I use trimmed mean CPI over headline CPI as my preferred measure of inflation in the broader CPI basket, despite the tendency for shippable goods to be trimmed out of trimmed mean CPI before 2020. This is because the pass-throughs to Australian headline inflation estimated using the model in this article were implausibly large and imprecise, which could reflect additional bias from the broad scope of the CPI basket. That said, the pass-through to headline inflation implied by scaling the estimated pass-through to shippable goods inflation by the 25 per cent weight of shippable goods in the CPI basket is consistent with the estimates in Carrière-Swallow *et al* (2023).

6 Carrière-Swallow *et al* (2023) estimated the average response of headline inflation across a sample of over 100 economies (including Australia) in response to shocks to bulk commodity shipping prices, using a sample period of 2006–2021.

7 See Appendix C for an explanation of how I estimated contributions to trimmed mean inflation.

References

ABS (Australian Bureau of Statistics) (2023), 'Spotlight on Recent Trends in Freight Costs', 4 May.

Attinasi MG, A Bobasu and R Gerinovics (2021), 'What is Driving the Recent Surge in Shipping Costs?', ECB *Economic Bulletin*, Issue 3/2021.

Beckers B, J Hambur and T Williams (2023), 'Estimating the Relative Contributions of Supply and Demand Drivers to Inflation in Australia', RBA *Bulletin*, June.

Bishop R, J Boulter and T Rosewall (2022), 'Tracking Consumption during the COVID-19 Pandemic', RBA *Bulletin*, March.

BITRE (Bureau of Infrastructure and Transport Research Economics) (2023), *Australian Sea Freight 2020–21*, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, Canberra.

Carrière-Swallow Y, P Deb, D Furceri, D Jiménez and J Ostry (2022), 'Shipping Costs and Inflation', *Journal of International Money and Finance*, 130, 102771.

Jordà Ò (2005), 'Estimation and Inference of Impulse Responses by Local Projections', *American Economic Review*, 95, pp 161–182.

Kamali P, R Koepke, A Sozzi and J Verschuur (2024), 'Red Sea Attacks Disrupt Global Trade', IMF Blog, 7 March.

RBA (Reserve Bank of Australia) (2025), Graph 2.18 in 'Chapter 2: Economic Conditions', *Statement on Monetary Policy*, February.

RBNZ (Reserve Bank of New Zealand) (2024), *Monetary Policy Statement*, February.

Sly N, AL Smith, E Johnson and T Herriford (2016), 'How Does a Rise in International Shipping Costs Affect U.S. Inflation?', Federal Reserve Bank of Kansas City *Economic Bulletin*, 1 December.

Vehbi T, S Sengul, D Christen, L D'Aguanno and T Wise (2022), 'The Impact of Shipping Costs and Inflation', Bank Underground, 2 March.