Research Committee update: Pallets [redacted] – global pallet systems and shortages

Key points

- [redacted]

- **Australia's pallet pooling system, characterised as a commercial 'open pool', is relatively unique. 'One-way' pallet pooling services are more common internationally, while a co-operative pallet pool is successful in Europe.**

- **Drawing on international experience, some hypotheses about the economics of pallet pooling [redacted] include:**
  - In high volume industries, pallet pools provide a lower total industry cost than single-use 'white' (non-pooled) pallets.
  - Entry into pallet pooling is unlikely in Australia unless driven by technological innovation or timber pallet substitutes, or a niche problem in a specific region or industry.
    - Large capital investment requirements for a pool present a substantial barrier to entry in pallet pooling.
    - The larger the pallet pool, the lower the unit cost of hire pallets. The long term success of more than two pallet pools in a single market is unlikely.
  - Pallet pools can fail due to asymmetric information about pallet quality, which in turn can lead to decreasing quality in the pool.

- **Pallet shortages have been experienced post COVID-19 across industrialised countries, with similar drivers to Australia's (demand increases from just-in-case inventory holdings and input price rises).**
  - Markets have responded with increased prices for pallets; and pooling system companies such as CHEP have increased their efforts in pallet recovery.
  - We have not found any instances of government involvement in pallet markets internationally.

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Post-pandemic pallet shortages have affected global supply chains

We looked at whether pallet shortages have been experienced outside Australia following the COVID-19 pandemic, and whether the drivers were similar to Australia's (that is, demand increases from business shifts to just-in-case inventories; increased timber prices). The drivers appear to be much the same as in Australia, other than greater disruptions in Europe due to the Russian invasion of Ukraine.

- In the **US**, shortages in pooled pallets were caused by input price increases, manufacturers and distributors increasing pallet inventory and inventory dwell time, and pallet pooling companies rationing supplies (Dube 2022).
- In **Europe**, shortages of pallets, wood and nails caused pallet prices to increase significantly. A number of countries in Western Europe would normally source up to 25% of their pallet and packaging wood from Ukraine, Russia and Belarus (FEFPEB 2022; Todd 2022).

- **New Zealand**'s Food and Grocery Council noted a shortage of pallets caused by businesses moving from a just-in-time to a just-in-case basis.

CHEP reported pallet availability constraints across all regions in which they operate as a result of constraints on new pallet supply and lower than normal pallet return rates (Brambles 2022a).

It is possible – and will be tested as we get more information [redacted] – that price signals function better to allocate pallets in markets in which there is less pallet pooling, because the purchase price of pallets could immediately adjust when input costs rise, whereas pooling systems tend to have contracted arrangements that limit the short term adjustment of pallet prices for users. This could reduce scope for the pool operators to recoup from pallet users the higher pallet costs incurred by them adding new pallets to the pallet pool to meet higher user demand.

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Approaches to pallet shortages overseas

How have markets responded to pallet shortages?

CHEP Australia responded to the pallet shortage by increasing their pallet pool and pallet manufacturing and repairing capacity (including diversifying supplier base and onboarding new manufacturers), engaging with customers to encourage the return of pallets, offering alternatives to timber pallets (including plastic pallets, crates, containers and bins) and upgraded online ordering systems (CHEP Australia 2022).

CHEP US increased efforts toward pallet recovery, compensating nearly 1,800 pallet recyclers through an asset recovery program for the return of CHEP pallets. CHEP US also increased their low-volume recovery fleet capacity to allow more frequent collection of return pallets from small and mid-sized retailers. They also recovered 100,000 illegally taken and sold CHEP pallets by expanding their asset protection team. Over the year to August 2022, CHEP US increased their collection points by 24% and pallet volume collections by 45% (2022, p. 24).

As far as we have been able to tell from desktop research, other pallet pooling companies overseas have followed suit. For example, Palletone, one of the leading providers of pallets in the US, implemented a daily direct communication with its key suppliers to reduce exposure to supply risks (Mordor Intelligence, p. 13).

How have governments approached pallet shortages overseas?

We looked for any case studies of government intervention in pallet shortages and have not yet found any instances of government involvement.

Pallet pooling markets operate differently overseas

There are several different operating models for pallet pools used overseas. The two main models for pooling are:

- commercial pools, which may offer one-way pallet services, transfer hire services, or a mix
- co-operative pallet pools (sometimes called 'exchange systems').

Commercial pools

One-way pallet pools

In one-way pallet pools, the pooling company comes to retrieve their pallets after they reach their destination.

One-way pallet pooling systems dominate in countries other than Australia. CHEP, for example, offers one-way pallet pooling services in Europe and North America. Pallets can be hired from CHEP, used for moving goods and then must be returned to or picked up by CHEP (CHEP UK nd; CHEP USA nd). CHEP is a major operator in both markets.

One-way pallet pooling systems face higher transport costs than cooperative pools, as the pallets have to return to the depot after each trip. Customers are willing to accept this higher cost since one-way pallet rental reduces their handling, sorting and administration costs (LeBlanc 2004).

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Open pallet pools

In open pallet pools like Australia's, hired pallets do not need to be collected by the pooling company after every trip. The pallets can be moved between producers, manufacturers, distributors, retailers and other parts of the supply chain, with each step recorded and pallet hirers only paying for pallets that they currently hold. When a business at any point in the supply chain receives more pallets than they need, the pooling company comes to collect the surplus pallets, reconditions them and returns them back to the network as new hires.

We understand that CHEP US offers this service, but the more common service is the one-way hire.

Co-operative pallet pools (exchange systems)

Some regions or business collectives operate pallet exchange systems, also known as co-operative pools. Co-operative pallet pools have members (who are pallet using businesses) who collectively own a pool of pallets. Pallet pools or exchanges can be initiated as a cost-saving measure for participating businesses. The manufacturing, repairing and quality assurance of this pallet pool is conducted by the co-operative through the maintenance of standards. Pallets can be used by members to move goods and the user receiving the goods exchanges the loaded co-operative pallets for empty pallets upon delivery (EPAL nd).

Small non-revenue driven co-operative pools typically consist of a few local customers in one or two industries creating and managing their own pool (Freedonia Group 2020, p. 208).

- For example, a few local wineries may share pallets that have been stamped to indicate co-operative ownership. The pallets would then be used for deliveries and the trucks can return the marked pallets to the wineries rather than having several trucks collecting pallets (Freedonia Group 2020, p. 209).
- In Japan, the beer industry set up its own co-operative pool and later invited other beverage companies to join to reduce the unit cost of the pool (LeBlanc 2004).

Larger scale examples of co-operative pallet pools are EPAL across Europe and the – now closed – Canadian Pallet Council (CPC) in Canada.

- EPAL continues to operate the largest exchange system between users in the supply chain in the world. EPAL runs an exchange system in which loaded EPAL pallets can be exchanged for empty pallets at almost every goods recipient in Europe (EPAL nd).
- The CPC was a non-profit organisation that operated in Canada for 30-odd years before ceasing in 2015. During its operation, the CPC had 1,400 members who collectively owned and exchanged over 7 million pallets (LeBlanc 2019).

EPAL and CPC were established alongside a set of pallet standards as a watchdog (LeBlanc 2004), which means they pre-dated commercial pallet pooling services. EPAL has been able to defend against the entry of commercial pools in Europe because it reached a significant size – and therefore lower unit costs – before the entry of commercial pools such as LPR, CHEP, Euro Pool Group and PRS (LeBlanc 2004).

For CPC, however, CHEP's expansion in North America offered logistical advantages to Canadian businesses exporting to the US, and put pressure on the co-operative system that did not extend across the border (LeBlanc 2004).

As pallets are collectively owned by members, co-operative pools face the challenge of enforcing pallet quality. Individual members bear the costs of replacing or repairing damaged pallets and so there is an incentive to pass on pallets when they are low quality to avoid those costs. This incentive can result in an overall declining quality across the pool of pallets.

To solve this problem, CPC required users to replace 25% of their pallets yearly, and both CPC and EPAL fined participants if they did not fulfil their responsibilities to repair and replace pallets. But this requires significant enforcement costs (LeBlanc 2004). There is some evidence that membership of the CPC scheme declined due to a decline in the quality of the pallet pool (LeBlanc 2019).

What can we learn from overseas about the economics of pallet pooling?

A Capital Partners study of global pallet pooling, based on interviews with industry participants (LeBlanc 2004), found that:

- In high volume industries, pallet pools provide a lower total industry cost than one-way white pallets.
- At similar levels of penetration, commercial pools are generally lower cost than co-operative pools.
- Because of large capital investment requirements for a pool and years of operating losses after launching, there is a substantial barrier to entry in pallet pooling.[1]
- The larger the pallet pool, the lower the unit cost of hire pallets. This has driven the growth of pan-European rather than country-centric pools in Europe.[2]
- The long term success of more than two pallet pools in a single market is unlikely. The dominant pool in a region will achieve lower unit cost than smaller competing pools, but both can prosper.

[1] This proposition may be supported by CHEP and Loscam's decision in 2022 to combine their Greater China operations to achieve greater scale, with only 1% of the 1.6 billion pallets in China pooled (Brambles 2022b).

[2] This has been demonstrated by the development of a cross-border pool in ASEAN countries. Loscam's operations in Thailand, Vietnam, the Philippines, Indonesia, Singapore, Malaysia and Myanmar effectively operate as one pool, with pallets able to be transferred across borders and returned to Loscam depots in the receiving country.

The report also noted that Australia has a stable pallet pooling duopoly (in 2004, CHEP had 80% of the market, Loscam had 20%) and they both made 'reasonable' returns – CHEP's higher than Loscam's (LeBlanc 2004). Currently, CHEP has about 66% of the Australian pooling market and Loscam 34%.

While we do not yet have enough data on pooling systems in Australia and globally to either agree or disagree with these findings, they are a reasonable set of hypotheses [redacted] to test.

To this we would add the observation that the challenge for alternatives to – or substitutes for – commercial pallet pooling (either cooperative arrangements or passing white wood pallets along the supply chain) appears to be *asymmetric information about pallet quality*, which creates incentives for pallet users to pass on lower quality pallets and leads to a decline in the overall quality of pallets circulating in the supply chain.

In theory, commercial pallet pooling models – where pallets are owned by a company responsible for guaranteeing pallet quality – should be able to solve the problem of pallet quality declining in a pool because there are no incentives for customers to hide pallet quality. In normal times, customers have the incentive to return the *lower* quality pallets to the depot and pass on the *higher* quality pallets through their supply chain. Interestingly, however, the breakdown in the pallet pooling system in 2021 was partly a quality issue. If a large grocery retailer chose not to return pallets to the pool for reconditioning (because they expected to receive insufficient pallets back in return) the average quality of the pallet pool declined. And as we saw in Canada, pallet pools *can* fail due to pallet quality.

Australia's pooling system may be unique in more ways than just the maturity of the pallet pooling model. We are yet to explore how the concentration of market power in pallet supply interacts through repeated dealings with concentration in pallet demand in the grocery sector. We are also interested in how these market structures might allow businesses to make decisions that affect the pallet hire market as a whole or smaller businesses (suppliers and competitors).

Some of the questions the team is left with after our research on international pooling systems and pallet shortages are:

- **Market power in pallet demand**: To what extent is concentration of market power in the grocery sector affecting the pallet pooling system in Australia? We will need to ask CHEP and Loscam early on about their customer base, and how much of their pallet pool is in the grocery sector.
- **Contracts**: What role do contracts play in resolving – or exacerbating – pallet shortages? How long are contracts, and do contracts adjust to changing prices of pallets? How enforceable are requirements to return pallets to the pool?
- **Information**: What information do businesses using pallets, and businesses supplying pallets, have access to, and are there any blockers to this information?

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