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Policy Brief
#2

Dealing with the trade in counterfeit and unapproved aircraft parts

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Background

Product counterfeiting is one of the fastest-growing crimes in the world. The World Trade Organisation estimates that counterfeits make up 7% of all global commerce. This infringement of intellectual property rights can often pose a threat to public health and safety, particularly if the counterfeits are 'safety critical' products such as aircraft parts. It is estimated that as much as 10% of the legal market for aircraft parts is counterfeit and the presence of these parts on commercial aircraft is more commonplace than most realise. Moreover, such counterfeits are just *one type* of a broader category called 'Suspected Unapproved Parts' (SUPs), which is essentially any part that does not conform to strict industry standards – whether that be in the way in which the product was made or the documentation that accompanies it. This policy brief is based on a project exploring how counterfeit and unapproved aircraft parts enter the legitimate supply chain and what factors drive or motivate their circulation and use. The research gathered data from participants in the UK, USA, Germany, Bulgaria, and the Netherlands. Those who participated in the study are highly specialised and knowledgeable actors with extensive knowledge of SUPs, the structure of the supply chain, and the regulatory oversight systems of the aviation industry. What follows are some key findings from this research and a number of policy recommendations.

Findings

- **The commercial aviation industry is subject to intense market pressure and competition, which breeds a tendency to seek competitive advantage by lowering operational costs, particularly those associated with aircraft maintenance**. "*Safety comes with a price*" and companies will try to balance safety requirements and sales quotas. There are instances where casual labour or unlicenced engineers are called upon when demand for services exceeds a company's operational capacity to deliver a product or service.

- **Commercial pressure and work culture can influence the way in which aircraft maintenance is performed. This influence may incentivise the 'burying' of defects to speed up the return to service and/or the use of unapproved parts to overcome long lead times and prevent penalties due to the unavailability of parts**. Two examples from the research usefully illustrate the point:

    1. *"Somebody's inspecting an airplane and he sees it's got a hydraulic leak, and so he goes to the manual and the manual says 'X number of drops per minute' [is fine], and he checks it and says 'ok its within limits'. But as soon as it starts moving it leaks more, and he lets it go, he signs it off".*

    2. *"An individual bought some parts on a credit card because he saw these parts were available at a supplier. The other parts that were available had a long lead time and, irrespective of the importance of safety within my industry there is of course commercial pressures. So, he thought he'd be creative and source these components, get them in and circumnavigate the lead time. We had pressures to deliver the product that these components were needed for".*

- **The reporting of SUPs is often discouraged, particularly in settings of insecure employment**. Maintenance, Repair and Overhaul (MRO) organisations strive for a 'just culture' but this is not always present in practice. For example, it was noted that *"once you report a suspect part you are in the spotlight. They may even tell you to pack your stuff and go".*

- **Parts brokers feature prominently in the SUPs trade and are an important link in the supply of unapproved parts.** Estimates cited by the U.S Patent and Trademark Office suggest that there are more than 5,000 brokers operating in what is virtually an unregulated market. Brokers legally purchase components removed from unserviceable aircraft 'as removed', but in order to sell the parts as 'serviceable', brokers need a repair shop to recertify them. Whilst some repair shops will ask critical questions of components missing documents of trace, there are, of course, exceptions. The research indicated that "*a lot of the time you have repair stations and parts brokers that are working together to falsify documents and sell their parts*". The use of refurbished and reused parts is common in aviation and forms a big part of the industry's legitimate stock. However, this also serves as one of the main entry points for SUPs.

- **One-off purchases from non-approved suppliers (often in an attempt to avoid long lead times or overcome parts shortages) and inadequate receiving inspections performed by untrained staff compromise quality control**. Sometimes quality assurance is assumed when procuring components from suppliers in 'respectable' countries.

- **Counterfeit and unapproved parts can be very difficult to detect. The typical counterfeit part 'looks the same', 'feels the same' and, at least for a while, 'works the same' as a genuine part.** Damaged packaging, damage to the parts, or other irregularities in the components, such as, for example, identifying numbers or letters that are stamped on backwards, are often indicators of SUPs.

- **Standard parts, like O-rings, nuts, and bots, are the most frequently used parts in aviation and are also the most susceptible to counterfeiting**. Whilst not necessarily considered 'flight-safety critical' in themselves, these parts are also used in the instillation of components that are. **Standard parts must be accompanied by a Certificate of Conformity (CoC), which details who the manufacturer and distributor are and to what standard the part was produced. However, rather than specifying these details, it is often the case that the Certificate of Conformity is just a certificate of compliance, stating that the part is delivered in accordance with the Purchase Order.** Although Purchase Orders should state what should be on the CoC, instances were identified where the Purchase Order simply declared "*I want to buy 300 bolts and please include CoC*". This, therefore, opens up a potential entry point for SUPs from *within* the regulatory framework designed to ensure the quality of parts.

- **The motivation of those involved in the various stages of the SUPs trade differs considerably:**
  - **supply of SUPs via counterfeiters or parts brokers is motivated largely by profit. The high profits and low risk of detection and prosecution make the trade in counterfeit and unapproved parts an attractive illicit venture.**
  - The use of SUPs, or indeed the failure to identify/report SUPs, appears to be motivated by reasons less nefarious. Here, the **need to satisfy contractual obligations and avoid penalty payments for delays in returning aircraft to service, form powerful incentives to circumnavigate approved supply chains when parts are difficult to procure**. Similarly, **the desire to retain employment by not 'rocking the boat' incentivises the 'burying' of defects and prevents the reporting of suspected unapproved parts.**

Policy recommendations

- As parts brokers represent a critical vulnerability in the aviation supply chain, regulators should explore the possibility of **mandatory registration, licensing, and regular auditing of parts brokers.**

- The integrity of documentation accompanying aircraft parts should be enhanced. **Certificates of Conformity (CoCs) should be standardised and required to explicitly state (a) the manufacturer, (b) production standards, and (c) the authorised distributors. Purchase Orders should be required to specify the exact information that must appear on CoCs, reducing ambiguity that currently allows suspected unapproved parts (SUPs) to enter the supply chain.**

- **Organisations involved in maintenance, repair and overhaul (MRO) should be required to ensure that receiving inspections are carried out by adequately trained personnel.**

- Fear of employer retaliation discourages the reporting of SUPs. **Regulators should strengthen whistle-blower protections for engineers and maintenance staff, who report SUPs or safety concerns. Reporting mechanisms should be confidential, non-punitive, and clearly separated from employment disciplinary processes**.

- The trade in counterfeit and unapproved aircraft parts is inevitably transnational. **Authorities should strengthen intelligence-sharing arrangements with international regulators, customs agencies, and intellectual property enforcement bodies.**

- **Research informed awareness campaigns should be developed for procurement staff, engineers, and quality managers, focusing on common indicators of SUPs and known entry points into the supply chain.**

Further engagement/more information
For more information on the project please see Kotzé, J. & Antonopoulos, G.A. (2023) 'Con Air: Exploring the Trade in Counterfeit and Unapproved Aircraft Parts', *British Journal of Criminology*, 63(5), 1293-1308 DOI: 10.1093/bjc/azac089.
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