



The Economic Impact of Cargo
Night Flying at Dublin Airport

FLIGHT	DESTINATION	STATUS	TIME	PIER	MARKS
OU 366	DUBROVNIK	2100	02		
JA 707	SKOPJE	2100	03		
OU 342	SARAJEVO	2100	04		
OU 8660	SARAJEVO	2100	13		
OU 660	DUBROVNIK	2105	15		
AZ 543	DUBROVNIK	2230	03		
AF 2055	PARIS	0550	02		
LH 2485	FRANKFURT	0650	16		
OU 410	FRANKFURT	0655	17		
SK 9300	FRANKFURT	0655	17		
OS 7052	VIENNA	0655			



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1. Jobs and Trade: How night flights Support the Irish Economy

Supporting the Irish Economy

- 1.1. **Night flights carry around €19 billion worth of imports and exports every year.** In figure 4.8 we show that night flights carry around €8 billion worth of exports (6% of Ireland’s exports) and around €11 billion in imports (12% of Ireland’s imports).
- 1.2. **Cargo night flying supports €1.1 billion in GDP and 15,000 jobs.** According to a 2019 economic impact study, Dublin Airport supports €9.8 billion in GDP and 129,700 jobs¹. Air cargo night flying alone is a catalyst in driving productivity in Ireland’s trading economy, which is estimated to generate over €1.1 billion in annual GDP, supporting the equivalent of around 15,000 jobs. This clearly demonstrates the value of express freight services, which are reliant on night flying, in supporting the wider economy in Ireland.

€1.1 bn
15,000 jobs
GDP and jobs supported in Ireland’s trading economy by cargo night flying at Dublin Airport

38%
of Dublin’s Air Freight is Flown at Night

1.3. **Night flights are a key pillar of ‘Ireland plc’.** They allow Irish business to send financial, legal or business documents, critical manufacturing components, perishable produce, urgent consumer goods or even time critical medical or pharmaceutical products over night to arrive the next day. In Section 2 we show why without those flights it simply wouldn’t be possible to connect these goods with the USA, with our European neighbours or with the rest of the world in a timely way.

1.4. **Night flights are central to supporting high value manufacturing exports.** In Section 4 we show that over 80% of the freight handled at night in 2018 was imports, with the early morning arrivals mainly operated by express freight airlines, accounting for around 28,500 tonnes. These sectors typically source most of their components from overseas, process them in Ireland and then export them back out to the rest of the world.

€19 bn
value of air freight carried on night flights at Dublin each year

- 1.5. **Night flights are vital for some of the fastest growing sectors in Ireland.** Section 3 looks at the range of industries supported by night flights. For example, Ireland is currently in the midst of a “Pharma Boom” that is driving a surge in exports and Foreign Direct Investment. Ireland now houses all of the top 10 global pharmaceutical companies and 13 of the top 15 global medical devices companies. These types of companies regularly ship temperature sensitive goods that need fast, time sensitive deliveries to arrive the next day. Without night flights this simply couldn’t happen.
- 1.6. **Air cargo night flying is only used when there is no alternative.** Section 2.6 shows shipping goods that require night flights carries an expensive premium. Companies pay that premium because it is essential for the operating of their business that these goods can be picked up at the end of the working day and move quickly to arrive the next day. This is particularly important for goods going to the EU where the working day starts one hour earlier than in Ireland because of the time difference.

Supporting Dublin and the Local Economy

- 1.7. **Night flying supports jobs and GDP in Dublin** – Table 6.1 shows that Cargo night flying at Dublin Airport directly supports around 330 jobs and €27 million in GDP each year at Dublin Airport.
- 1.8. **Night flights take pressure off local infrastructure.** Section 2 shows that flying at night often means that airspace and airport infrastructure is less congested, as is the road infrastructure around airports. This enables greater speed, efficiency and

€27 m
330 jobs
GDP and Jobs directly supported at Dublin Airport

¹ InterVISTAS Consulting for daa – Global Reach National Success, Dublin Airport Economic Impact Study 2019.

reliability of processing. All of which are essential elements of the service that is being delivered.

1.9. **Freight flown at night now accounts for 38% of the total freight volumes at Dublin airport** and around 63% of night air cargo is transported by express freight operators primarily shipping time sensitive goods. In Section 4 we show that night flying is an essential part of the air cargo market at Dublin and is necessary for express services that can collect at the end of a working day in time for next day delivery.

1.10. **Air cargo shipped via Dublin Airport represents 35% of the value in Euro of all Irish freight.** The Irish National Aviation Policy published in 2015 identified that while air freight accounts for just 1% of total freight tonnage, it accounts for around 35% of the value of all freight shipped to / from Ireland. This suggests that a tonne of air freight could be 53 times more valuable than a tonne travelling by any other mode. This supports jobs in the wider national Irish economy and ensures Irish businesses can compete on the global stage.



A Sustainable and Responsible Industry

1.11. **Committed to a sustainable approach.** The freight industry as a whole is committed to a sustainable approach and has consistently proven that it can fly responsibly at night.

1.12. **Investing in newer, quieter aircraft.** In recent years there has also been significant investment by freight carriers in the latest aircraft with the lowest noise profiles and lower carbon emissions, because the industry recognises that it has a responsibility to local residents as well as to providing an excellent service for Irish and international businesses.

The Balanced Approach

1.13. The international approach to aircraft noise management is based on the ICAO Balanced Approach. At its core it is based on the principle of sustainable development, allowing development of air travel while balancing the impact on the acoustic environment. It makes clear that the noise situation at each airport is unique and there is no one size fits all solution.

1.14. As we begin a new decade, modern aircraft are both quieter and more vital to the functioning of our economy than they were even 10 years ago. With an estimated €1.1 billion in GDP at stake from cargo flying along, the future of Ireland's economic growth relies upon continued support for a sensible and balanced night flights regime.

2. Introduction

- 2.1. Dublin Airport is one of the most important economic drivers for Ireland, providing the global connectivity that supports the country's international economy. It is a gateway for business travel, tourism and, importantly, it is a vital port for the shipping of goods and packages. An economic impact study undertaken for daa, previously Dublin Airport Authority, in 2019 estimated that the airport supported almost €9.8 billion in GDP and around 129,700 jobs².
- 2.2. Shortly, Dublin Airport will take a major step forward in terms of its future growth potential and ability to drive economic growth. The new North Runway is due for completion in 2021. This will relieve the existing capacity constraints at the airport and secure the ability to grow in the future. However, there is a significant caveat to this good news. Currently, the operation of the airport post opening of the North Runway will be subject to two planning conditions that have the potential to significantly impair the airport's ability to deliver growth and support the economy:

"Condition 3(d) prohibits use of North Runway for landings and take-offs between the hours of 11pm and 7am.

*Condition 5 states that, on completion of construction of the new runway, the average number of night time aircraft movements (during the busy summer period) at the airport shall not exceed 65 per night (between 11pm and 7am)."*³

- 2.3. These two conditions will significantly limit Dublin Airport's ability to operate at night and, in fact, would result in a reduction from the current levels of night time operations. In summer, daa estimates that there are around 100 aircraft movements each night^{4,5}. The planning conditions as they stand would, therefore, require a reduction in night movements of around 35% in this period. This would have significant implications for both passenger and cargo airlines operating at the airport. Both groups are reliant on night time operations to enable them to support their business models.
- 2.4. In this context, this report examines the importance of night flying to cargo operations at Dublin Airport before moving on to estimate the economic impact of these operations on the Irish economy. The analysis focusses particularly on express freight services⁶, such as those provided by the main integrators⁷: DHL, Fedex, TNT and UPS. The customers of these airlines are heavily reliant on their being able to operate at night to facilitate the provision of the high speed / next day delivery services (both to and from Dublin) that modern, developed city economies rely on to maintain their competitive positions as locations for global companies trading goods and services⁸ in key sectors such as pharmaceuticals, financial and business services, IT and agri-food.
- 2.5. Currently, we estimate that freighter aircraft movements account for around 7% of night movements. If passenger movements carrying bellyhold freight⁹ are included, the number of freight related movements increases to around 24% of night movements. It is, however, the intensity of use of the night period that starts to demonstrate its importance to freight airlines. Only around 13% of passenger aircraft movements are in the night period at Dublin.

² InterVISTAS Consulting for daa – Global Reach National Success, Dublin Airport Economic Impact Study 2019.

³ An Bord Pleanála Reference Number: PL 06F.217429. Planning Conditions. Available at: https://www.dublinairport.com/docs/default-source/planning/planning-conditions.pdf?sfvrsn=ff46e534_0. (Accessed: 15/1/2020).

⁴ The night period is defined as between 23:00 and 07:00.

⁵ Some commentators have suggested that this number may now be closer to 115.

⁶ Operators of freighter aircraft can broadly be divided into two segments: express freight operators (sometimes referred to as integrators), which includes DHL, Fedex, TNT and UPS, who focus particularly on next day and time definite, 'door to door' services, and traditional cargo airlines, which use dedicated aircraft to move items around the world quickly, but do not generally have the same focus on next day delivery or time definite services. It should be recognized that the dividing line between these segments is not precise but it provides a helpful broad distinction.

⁷ Integrators are a particular type of freight company that offer time definite, door to door deliveries. They provide or procure for the customer all parts of an item's journey from door to door, thereby providing a seamless service.

⁸ It is sometimes forgotten that service firms, such as those in financial or business services, remain heavily reliant on express package services to operate given the continued requirement to physically move for instance contractual, financial or legal documentation.

⁹ Bellyhold freight is that carried in the holds of passenger aircraft operating what are primarily passenger services. Again, it should be recognized that there are overlaps with other air cargo segments, notably express freight operators, which often use bellyhold capacity to move items where this option offers a more efficient solution than using their own aircraft.

However, over 50% of the aircraft movements by the express freight operators at Dublin occur in the night period and around 40% of those by other air freight airlines. This begins to articulate the particular importance of the night period to cargo operations.

2.6. This analysis also needs to be viewed in the context of the UK's upcoming departure from the EU. Recent research by Copenhagen Economics for the Department of Business, Enterprise and Innovation¹⁰ has highlighted the significant potential negative effects of BREXIT on key trading sectors of the economy, a number of which are heavily reliant on air cargo services. Disruption to night flying at Dublin Airport can only worsen the position for these sectors that will already face challenging times as Ireland's economy transitions through the BREXIT process.

2.7. This report is structured as follows:

- in Section 3 we explain why night flying is important to cargo operations;
- in Section 4 we outline how air cargo and night flying supports prosperity in the economy;
- in Section 5 we provide more information on the cargo market at Dublin Airport currently and the role of night flying;
- in Section 6 we consider the economic impact of air cargo night flying on the Irish economy;
- in Section 7 we set out the conclusions from our analysis.

¹⁰ Copenhagen Economics - Ireland & the Impacts of Brexit: Strategic Implications for Ireland Arising from Changing EU-UK Trading Relations, 2018.

3. Why is Night Flying Important for Cargo Operations?

3.1. In this section, we explain why night flying is so important to the business models of air cargo airlines. We focus particularly on the express freight operators as it is for this group that the night is perhaps most crucial. However, the broad arguments remain the same for other air cargo segments bearing in mind that almost all air freight is to some degree time sensitive.

Air Cargo Operations

3.2. Air cargo is generally used to move mission critical, high value / time sensitive goods and packages. This is especially true of cargo flown at night. The night period is used to move items whose value is to a significant degree defined by their speed and / or certainty of delivery and for whom international delivery times need to be measured in hours rather than days and guaranteed delivery times and next business day delivery are key features of the offer. This could mean essential time expiring medical or pharmaceutical products, financial, legal or business documents, critical manufacturing components or spares, perishable produce or high value consumer goods. The night provides vital time between business days when goods / packages can be moved with minimal loss of productivity or time to market or user.

3.3. Services that use night flying are often referred to as express or priority services and are offered by a wide range of operators in the market. If the delivery timeframes offered by these services cannot be met impacts can be very high. For instance:

- some items may become degraded or unusable, such as clinical samples, time limited medical products or perishables, leading to knock on consequences ranging from financial losses to delayed or aborted treatments for life threatening illnesses;
- sales windows on perishable items may be shortened, meaning that the likelihood of sale is reduced and waste increased, ultimately leading to higher prices;
- production lines may be halted as components, spares or supplies are held up leading to delays and significant costs for manufacturers, operators and end users;
- deals may fail as essential legal and financial documents cannot reach their destinations in time.

3.4. It is a feature of the market that the economic cost of delay or failure to deliver can be disproportionate to the measurable value of the individual item.

3.5. Over the past 20 years express freight services have grown substantially faster than general air freight, reflecting the increasing integration of global financial markets and global supply chains, continued growth of 'just in time' processes, and the rise of time sensitive business to consumer (B2C) shipping.

Why is Flying at Night So Crucial?

3.6. Shipping cargo by air is more expensive compared to other modes of transport and the express or priority freight products associated with night flying are offered at a premium to standard air freight services. Air cargo night flying is only used by shippers and operators when there is no alternative:

- as we have described above, the night hours are needed to move items to meet the deadlines inherent within the express services on which shippers rely. Items often need to be picked up at the end of the working day in the country of origin and then delivered as early as possible the following day to enable companies to maximise productivity. The night is the time available to transport items to meet these types of deadline. Flying is the only way to cover the distances necessary. Trucking is simply too slow in the great majority of cases. It is ultimately a case of being able to fly at night or not being able to offer the service;

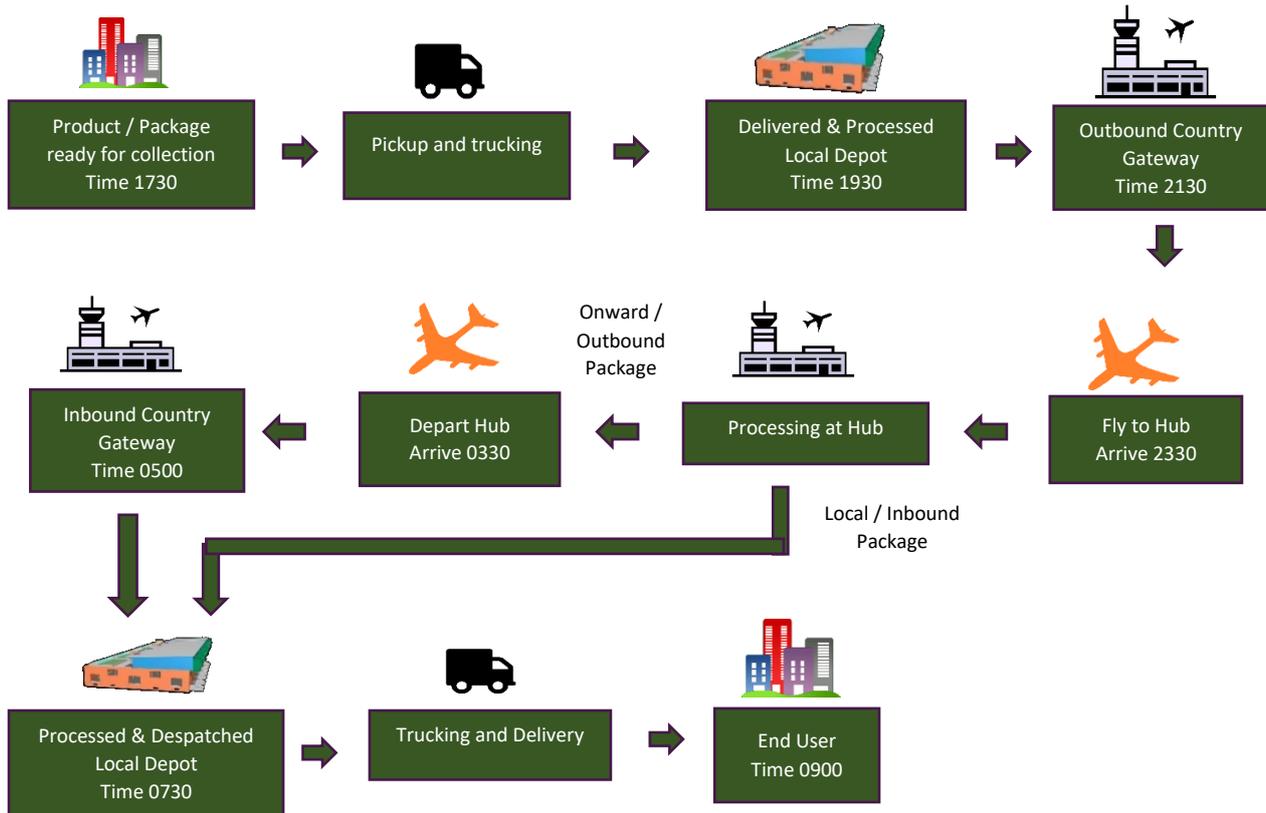
- night flights cannot simply be retimed. The ability of the express freight operators to offer next day and priority services is reliant on a global hub and spoke network similar to that used by the major network airlines¹¹ for passenger air services. This is based on meeting a system of late pick ups and early deliveries and on waves of arrivals and departures that enable packages to make connections at key hub airports. Passenger airlines offering bellyhold capacity have similar issues around their hub and spoke networks, with the added complication of having to also satisfy the timing requirements of their passengers. It is therefore not possible to simply retime services to be just before or just after the night periods as this would severely damage the integrity of the broader network. The only course of action open to freight service providers is to accept that air is no longer an option for express services and that delivery will take at least 24 hours longer. In these circumstances it becomes more cost effective to truck freight to and from the continent or perhaps UK airports and end users must accept the loss of service and productivity;
 - flying at night often means that airspace and airport infrastructure is less congested (as indeed is the road infrastructure around airports). This enables greater speed, efficiency and reliability of processing. All of which are essential elements of the service that is being delivered.
- 3.7. Express / priority cargo services are about fine margins and speed. Downgrading the system at any point means that it will not work. If the operators could not use night flying to / from Dublin, then the express operators' global network of operations will not be changed to accommodate restrictions at Dublin Airport. Dublin will simply become an offshoot that is served differently and at a lower level of service, probably involving trucking freight to destinations within Europe or at least to a European airport to be flown, with consequent impacts for shippers and purchasers from the time lost.

How an Express Package is Moved

- 3.8. Express / priority cargo services to / from Dublin are one of the factors that enable the city to be a successful global economy and an attractive place to invest despite its geographic location on the on the edge of Europe. These services allow companies trading with or from Dublin and the surrounding areas to move products and documents quickly and efficiently using next day and guaranteed delivery services.
- 3.9. Figure 3.2 shows an example of a typical intra-European express freight delivery. It shows clearly how the night is essential as the only time available to actually move the cargo. During the day items are being produced by the originator and picked up or they are being delivered. The diagram reflects primarily an express freight type operating model. However, the fundamental point remains the same across all business models. The night is the time when goods and packages can be moved with minimal loss of productivity in the wider economy.

¹¹ For instance IAG, Lufthansa, Air France / KLM or Emirates.

Figure 3.2: The Journey of a Typical Express Freight Package



Particular Issues for Dublin and Ireland

3.10. In Dublin's particular case there are three further factors that make night time air cargo operations even more important:

- ➔ geographic location – as we have already alluded to above, Dublin's location on the geographic edge of Europe creates additional challenges if express freight operators are to maintain their service standards around next day and guaranteed delivery times to / from Europe. The sheer distance between Dublin and the rest of Europe means that there is an even shorter time window in which to operate than in many other European countries. Night flying is essential;
- ➔ island location – linked to the above, Dublin is ultimately on an island. Meeting the required deadlines for the delivery network therefore means flying. No other mode is able to offer the necessary speed. In some circumstances, trucking can actually be faster than flying. However, this is not the case for Ireland;
- ➔ time zone – Ireland is one hour behind much of Europe. This means that any express shipments to Europe are always operating behind other countries. This further truncates the time that express freight operators have to deliver, making the night hours even more crucial. By the time it is 07:00 in Dublin, it is already 08:00 in Europe and people are awake and at work.

4. Why Air Cargo Night Flying is Important to the Economy

4.1. Ultimately, air cargo night flying and the services it enables are about productivity. Air cargo night flying allows the Irish economy to function more efficiently, allowing individuals and companies to add more value, using the ‘dead’ time at night to either move goods to market or to bring supply chain components to Irish based companies or to bring time sensitive goods to end users.

4.2. In other words, air cargo night flying:

- enables trading relationships, allowing Ireland based companies to enter global markets more effectively and enabling overseas companies to trade in Irish markets, providing choice and competition across a whole range of markets. It essentially makes distance less of a factor in trading relationships;
- makes Ireland a more attractive place to locate and do business, thereby helping to attract foreign direct investment (FDI). The availability of express and priority freight services supported by night flying means that companies can invest secure in the knowledge that products, supplies or documents can be moved quickly and efficiently around the globe from their Irish base. Importantly, in a competitive marketplace for FDI, it also means that the Ireland is not behind other locations;
- supports advanced logistics and supply chain functions, supporting the needs of manufacturers in a wide range of sectors and minimising the need for companies to hold inventory;
- means that Irish based companies can provide the highest levels of customer care and after sales service, providing products and spare parts with the minimum delay;
- from an Irish consumer point of view, air cargo night flying supports consumer choice. Enabling rapid delivery of products to market from all over the world.



4.3. These factors make Ireland more productive through the ability to develop comparative advantage, to access knowledge and technology and through the ability to compete on level terms globally. It is therefore one of the reasons why Ireland today ranks 7th on the IMD World Competitiveness Ranking¹² overall (2nd in the EU) and 3rd in the world in Business Efficiency (innovation, profitability and responsible businesses), whilst other European counterparts are slowly dropping.

Which Parts of the Economy Use Air Cargo Night Flying?

4.4. It is possible to identify in general terms some of the key economic sectors for which express services are important and in broad terms the nature of products that are shipped on night flights. The evidence base for this assessment comes from discussions with a number of airlines participating in the study and a range of previous research around night flying and express freight services:

¹² IMD World Competitiveness Yearbook, 2019.

- **Pharmaceuticals & Healthcare:** a substantial proportion of express freight users by value are businesses involved in the pharmaceutical, healthcare and biomedical industries. Many of these freight users ship temperature sensitive goods that need rapid deliveries and require time definite guarantees. Some of the pharmaceutical firms also undertake clinical trials, which increases the necessity for express delivery. Ireland is currently experiencing a “Pharma Boom”, where a large presence of pharmaceutical, healthcare, biotech and medtech companies is driving a surge in exports and FDI. All of the top 10 global pharmaceutical companies now have bases in Ireland¹³ as well as 13 of the top 15 global medical devices companies.
 - **Machinery and Transport Equipment:** the manufacturing sector has been transformed over the past twenty years by globalisation, technology and the growth of emerging markets. Ireland has responded to these fundamental changes by moving its manufacturing facilities and activities up the value chain in order to become the strategic hub of choice for global companies. In addition to the pharmaceuticals and healthcare sectors, there is also a significant presence from advanced engineering and ICT firms. These sectors operate advanced supply chains that draw components from all over the world and also require the ability to ship their products to market quickly and securely. This drives demand for high speed, reliable, time definite services to ensure that manufacturing processes are not disrupted;
 - **Professional Services:** Dublin is a European centre for financial and business services. As such, there is a significant and growing market for package services relating to finance, contract and other legal documents. Even now, physical delivery of key documents and transactions are often required and the ability to move documents overnight reliably to / from other key centres, such as London, New York, Hong Kong, Singapore, Frankfurt or Paris, is of paramount importance. A key example being a large global technology company, which uses express freighters for shipping its internal communications. Also, in the context of service exports, computing services exports accounts for roughly €69 billion and business services exports account for roughly €37 billion;
 - **Agriculture, Fisheries & Produce:** Irish salmon is in demand across the world, particularly the higher value fresh fish, which is highly time sensitive. In order to avoid product contamination, overnight express cargo is required. Irish Beef ranks amongst the top 15 goods export categories worth US \$2bn. Growing trade relations with China and the recent outbreak of swine fever¹⁴, have seen demand for Irish beef has increased significantly and this trend is expected to continue;
 - **E-commerce and B2C enterprises:** As online-retailing rapidly expands, the demand for express delivery also grows, with customers’ growing expectations of rapid delivery from various international suppliers. A report produced by Allied Irish Bank (AIB) identified that there has been a 25% growth in online retail transactions in Ireland between 2017-18 with Dublin accounting for around 30% of these transactions.
- 4.5. Overall, it is clear that large sections of Ireland’s international economy are directly reliant on air freight services and in particular the express freight sector. Restrictions on night flying will damage these sectors over the medium to long term.

¹³ Facts About Ireland – IDA Ireland, 2019.

¹⁴ <https://www.rte.ie/news/ireland/2019/1113/1090484-beef-china/>

5. Cargo Night Flying at Dublin Airport Now

Introduction

- 5.1. In this section, we provide a current detailed picture of the air cargo market at Dublin Airport, including the extent and nature of cargo activity in the night period.

Dublin Airport Freight and the Irish Economy

- 5.2. Dublin Airport is the busiest cargo airport in Ireland and handles around 90% of the country’s air freight. In contrast to other airports such as Shannon and Cork, Dublin has experienced rapid growth, from just under 114,000 tonnes handled in 2013 to around 145,000 tonnes in 2018 (a 27% growth over the 5-year period). Table 5.1 outlines the freight volumes handled at various Airports in Ireland.

Table 5.1: International Freight handled by Key Airports in Ireland (Thousand Tonnes)

Airports in Ireland	2013	2014	2015	2016	2017	2018
Cork	0.7	0.7	0.2	0	0	0.1
Dublin	113.5	127.4	137.3	134.2	144.9	143.7
Shannon	13.9	10.9	12.2	12.6	19	13.6
Total Ireland Air Freight	128.1	139	149.7	146.8	163.9	157.4
Dublin Airport (%)	89%	92%	92%	91%	88%	91%

Source: CSO & York Aviation analysis.

- 5.3. Air cargo shipped via Dublin Airport is essential to Ireland’s international trading relationships. The Irish National Aviation Policy published in 2015 identified that while air freight accounts for just 1% of total freight volume, it accounts for around 35% of the value of all freight in Ireland. This suggests that a tonne of air freight is 53 times more valuable than a tonne of freight travelling by any other mode. The gap is even greater for trade beyond the EU. Table 5.2 shows the volume and value of air freight as a proportion of total freight in Ireland to countries outside the EU. It accounts for only 0.6% of volume but nearly two thirds of the value. This is reflected in the value per tonne of exports and imports coming through Dublin Airport compared to other modes of transport (see Table 5.3). The value of extra EU exports per tonne using air transport was around €620,000. This compares to around €112,000 per tonne for the next nearest mode, road. Imports display a similar pattern, with a value per tonne for air freight of around €225,000 compared to a value for the next nearest mode, road, of €43,000 per tonne. It is also worth noting that in regards to trade with non-EU nations, Ireland ships more of its exports by air (64%) than any other EU nation.

Table 5.2: Extra-EU Freight by Volume and Value

Mode of Transport	Volume (%)	Value (%)
Air	0.6%	66.2%
Rail	0.0%	0.0%
Road	0.5%	7.9%
Sea	98.8%	26.0%

Source: Eurostat & York Aviation analysis.

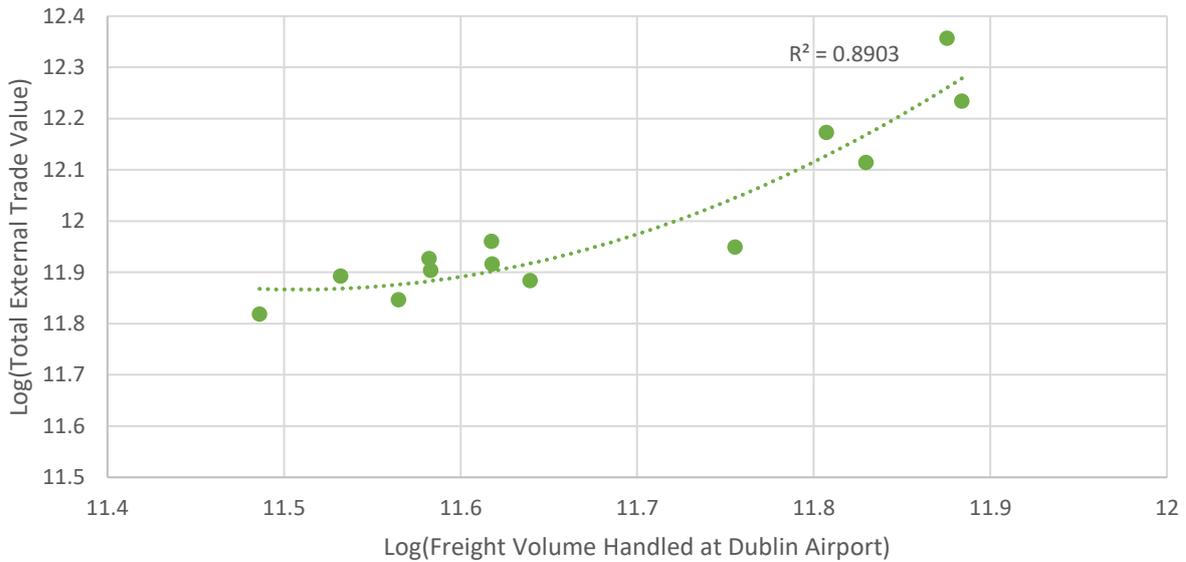
Table 5.3: Extra-EU Freight Value per Tonne

Trade Value per tonne	Exports	Imports
Air	€ 619,925	€ 225,162
Sea	€ 4,478	€ 554
Road	€ 111,727	€ 42,588
Rail	€ 3,649	€ 1,894

Source: Eurostat & York Aviation analysis.

- 5.4. Figure 5.1 below shows the correlation between the volume of international freight handled at Dublin Airport each year and the value of Ireland’s total external trade. There is a strong positive correlation between the two and the important role that the airport plays in high value trade can be seen from the upward curve of the relationship.

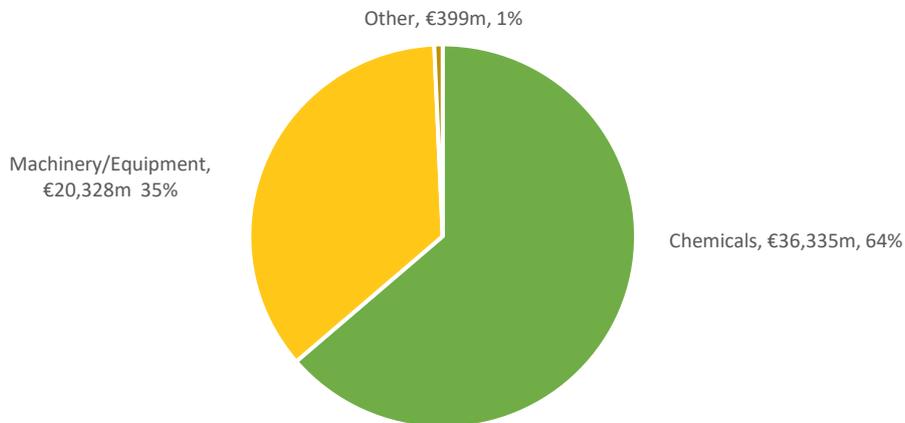
Figure 5.1: Correlation between Freight Volume at Dublin Airport and the Value of External Trade in Ireland



Source: CSO & York Aviation analysis.

5.5. Data from Eurostat demonstrates that extra EU trade at Dublin Airport¹⁵ is dominated by two key high value added sectors of the economy, with chemicals (predominantly pharmaceutical and healthcare products) and high value machinery, such as transport equipment and other manufactured machinery, making up nearly all trade by value between Ireland and countries outside the EU.

Figure 5.2: Irish-Extra-EU Air Trade Value by Sectors



Source: Eurostat & York Aviation analysis.

5.6. It is also important to understand the mechanics of air cargo’s role in supporting Ireland’s trading economy. The core drivers of Ireland’s overall goods exports are the same as those travelling by air. Chemicals and related products made up 55% of Ireland’s total exports by value in 2018, with Machinery and Equipment the next largest category accounting for 17% of value¹⁶. Both of these sectors are also significant importers of raw materials and components. They are part of a trading economy in Ireland that acts as a processor, drawing in components from a global supply chain, adding value and then exporting either finished products or components that are higher up the final value chain.

¹⁵ The same data is not available for EU trade.

¹⁶ Central Statistical Office – Ireland’s Trade in Goods 2018.

- 5.7. This pattern can be seen in Table 5.4 using data extracted from Ireland’s Input Output tables published by the Central Statistical Office. These sectors draw the great majority of their inputs from overseas and for all but one the great majority of finished products are then exported. These exports are valued at between 1.5 and 1.9 times the imports required to produce them.
- 5.8. The express freight operations at Dublin Airport are a key part of this picture. Discussions with the key express freight operators have identified the role that their services play in bringing high value and / or time critical components or other inputs through Dublin Airport to support manufacturing or research and development functions across these key sectors. The end products from these inputs are then often then flown onto market on the same services departing from Dublin Airport. These express freight activities are in other words in themselves a key input to Ireland’s trading economy and its value chain.

Table 5.4: The Relationship Between Imports and Exports in Key Sector Users of Air Freight

Values in € billion	Manufacture of refined petroleum, basic pharmaceutical, computer, electronic and optical products, machinery and equipment n.e.c., furniture, other manufacturing	Manufacture of chemicals and chemical products	Manufacture of electrical equipment	Manufacture of motor vehicles, trailers and semi-trailers, other transport equipment
<i>Production Inputs</i>				
Domestic	€4.6	€2.4	€0.1	€0.1
Imports	€53.2	€11.2	€0.6	€0.3
Total	€57.8	€13.5	€0.7	€0.4
% Imports	92%	83%	80%	79%
<i>Finished Products</i>				
Domestic Markets	€0.6	€0.4	€0.0	€0.3
Exports	€111.5	€24.3	€1.0	€0.3
Total	€112.1	€24.7	€1.0	€0.7
% Total	99%	98%	99%	49%
Ratio of Export to Import Value	1.9	1.8	1.5	1.6

Source: York Aviation analysis of Irish CSO Input Output Tables.

Cargo at Dublin Airport and Night Flying

- 5.9. Cargo activity at Dublin Airport is dominated by bellyhold freight and the main express freight companies, together accounting for around 94% of the total freight volume at the Airport (see Figure 5.3). The strong connectivity to the USA and the recent growth in long haul services to the east have boosted these volumes.
- 5.10. Night flying is an essential part of the air cargo market at Dublin. Freight flown at night is very important for the Irish economy, it accounts for 38% of the total freight volumes at the airport and is growing.

Figure 5.3: Freight Tonnage at Dublin Airport by Aircraft (2018)

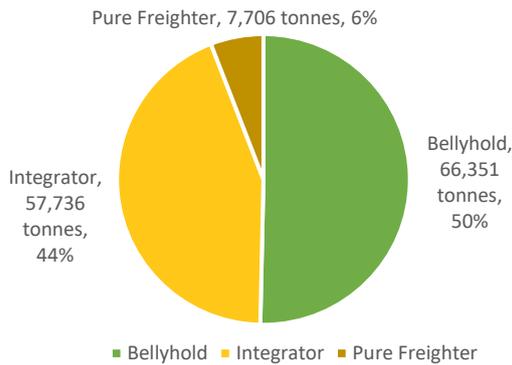
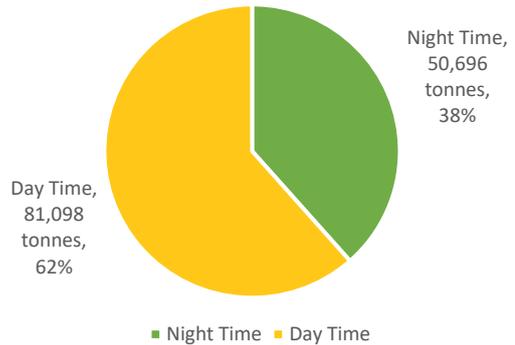


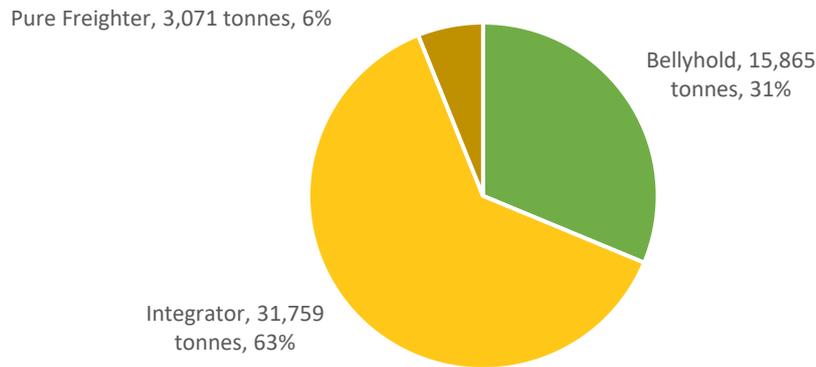
Figure 5.4: Freight Tonnage at Dublin Airport by Time (2018)



Source: DAA & York Aviation analysis.

5.11. Figure 5.5 shows the freight tonnage transported at night through Dublin Airport in 2018 by the different segments of the air cargo market. Around 63% of the air cargo flown at night is transported by the express freight operators, demonstrating the importance of the night to their business model.

Figure 5.5: Freight Volume at Dublin Airport at Night (2018)



Source: DAA & York Aviation Analysis.

5.12. Over 80% of the freight handled at night in 2018 was inbound shipments, with the early morning arrivals operated by the express freight airlines the key driver, accounting for around 28,500 tonnes. The next largest contributor was inbound bellyhold freight.

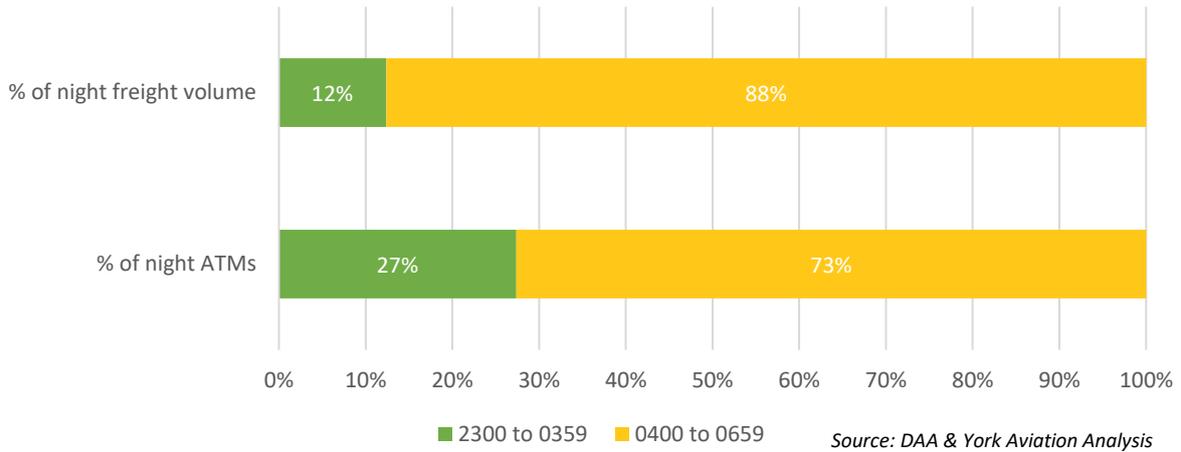
Table 5.5: Night Freight Tonnage by Market Segment and Direction

Night Period	Inbound (tonnes)	Outbound (tonnes)
Total Cargo	40,476	10,220
- Traditional Freighters	65	3,006
- Express Freight Operators	28,564	3,195
- Bellyhold Aircraft	11,846	4,019

Source: daa.

5.13. Figure 5.6 below shows that nearly 90% of the freight handled at night was handled after 0400 and nearly 75% of the ATMs occur in the same time period.

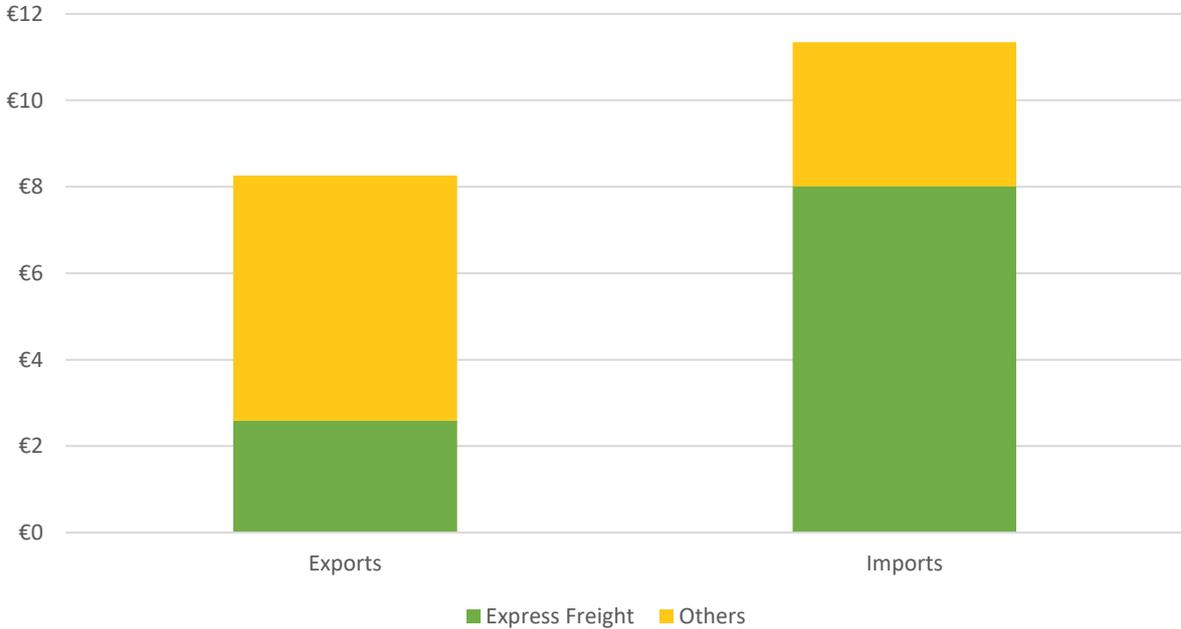
Figure 5.6: Proportion of Freight and Aircraft Movements at Night by Hour



Estimated Value of Trade on Night Flights

5.14. Estimating the value of trade shipped at night via Dublin Airport is highly complex as the data available is limited. However, below we have estimated the value of exports and imports based on available data from Eurostat and daa (see Figure 5.7). This suggests that night flights carry around €8 billion worth of exports (6% of Ireland’s exports) and around €11 billion in imports (12% of Ireland’s imports). Within this total, the express freight operators at Dublin Airport accounted for €3 billion of exports (2% of Ireland’s exports) and around €8 billion of imports (9% of Ireland’s imports).

Figure 5.7: Estimated Value of Exports and Imports Flown at Night at Dublin Airport



Source: York Aviation analysis of data from Eurostat and daa.

Conclusions

5.15. Dublin Airport is an essential trading port for Ireland’s international economy. It accounts for 35% of Ireland’s trade by value. More importantly, the trade facilitated by Dublin Airport is focussed on high value/time sensitive goods. The sectors that use air freight services in Ireland are key, high value added sectors of the economy, such as

pharmaceuticals and advanced manufacturing. Dublin Airport is also the only significant option for airlines seeking to serve the Irish market.

5.16. Night flying is an essential element in this market, enabling particularly the express freight sector. Around 38% of the total volume of air cargo at Dublin Airport is flown at night.

5.17. The night market for air cargo is primarily an inbound market, dominated by the express freight operators bringing goods and packages to Dublin and the surrounding areas. These shipments are bringing in, particularly, key supply chain components that support high value added sectors of the economy. These ultimately support Ireland's exporting sectors and adds significant value to the Irish economy.

6. The Economic Impact of Cargo Night Flying at Dublin Airport

Introduction

- 6.1. As we have demonstrated above, flying at night is an essential part of the operating model of air cargo airlines operating at Dublin Airport, particularly the express freight operators, and one that cannot be readily substituted, if at all. This night flying is in turn an intrinsic part of the economic value that air cargo operations support in the Irish economy. In this section, we estimate the GDP and employment supported in Ireland by air cargo night flying at Dublin Airport.
- 6.2. The analysis initially considers the employment and GDP supported directly on-site by night time air freight operations at Dublin Airport and the consequent supply chain (indirect) and expenditure of wages and salaries (induced) effects. Together, these three effects have been termed the operational impacts of air cargo night flying. However, importantly, our analysis also moves on to consider the employment and GDP benefits that accrue to sectors in the economy that use air cargo night flying to support their activities. These are referred to as the wider impacts of air cargo night flying.

Approach to Estimating Economic Impact

- 6.3. The analysis uses a number of secondary sources to estimate the current value of air cargo night flying at Dublin to the Irish economy.
- 6.4. The operational economic impacts associated with air cargo night flying have been assessed based on the results of the 2017 economic impact assessment of Dublin Airport undertaken by InterVISTAS Consulting for daa. This research used detailed survey work to identify the direct GDP and employment impact of passenger and cargo operations at the airport, combined with the development of a multiplier based model to consider indirect and induced effects. The research does not specifically identify the economic impact of cargo services at Dublin and certainly does not consider specifically the impact of night time cargo operations. We have therefore estimated the proportion of total workload activity¹⁷ at Dublin Airport that is associated with cargo night flying and used this as a basis to estimate its share of direct, indirect and induced impacts at the airport.
- 6.5. The wider impacts¹⁸ associated with air cargo night flying have been calculated using a different approach as the methodology used by InterVISTAS in their research for daa appears to solely focus on the wider economic effects associated with passenger travel. Our estimates have been derived using an econometric relationship developed by Oxford Economics for the UK economy. The relationship demonstrates that a 10% reduction in the level of business air travel and air freight relative to GDP will result in a 0.5% reduction in GDP. While this relationship was developed for the UK economy, given the similarities and linkages between the Irish and UK economies, it is felt to provide a sensible basis for assessing impacts in Ireland.

Operational Impacts

- 6.6. In Table 6.1 we have set out our estimates of the direct, indirect and induced impacts of cargo night flying at Dublin Airport based on 2018 demand levels.

¹⁷ A workload unit is either one passenger or 100kg of cargo.

¹⁸ These are sometimes referred to as catalytic impacts.

Table 6.1: Direct, Indirect and Induced Economic Impacts of Cargo Night Flying

	GVA (€m)	Jobs
Direct	€ 27	330
Indirect	€ 15	190
Induced	€ 16	230
Total	€ 59	760

Source: York Aviation.

- 6.7. This analysis suggests that cargo night flying directly supports around 330 jobs and €27 million in GDP each year at Dublin Airport. When indirect and induced effects are included, the total impact increases to around €59 million in GDP each year and 760 jobs.

Wider Impacts

- 6.8. As we have described above, air cargo is a vital part of Ireland's trading economy, moving around 35% of Ireland's trade by value, and night flying is an integral part of the service on offer, particularly in relation to the express freight services that are particularly highly valued. This is reflected in our assessment of the value added to the wider economy by productivity effects stemming from night flying. We estimate that at 2018 demand levels, cargo night flying boosted Irish GDP by over €1.1 billion, supporting the equivalent around 15,000 jobs.
- 6.9. It is important at this point to consider the substantial differential between the wider impacts and the operational impacts of night flying. It should be recognised that the primary function of infrastructure services, such as air transport, is to facilitate activity in other sectors and, as a consequence, their value to society is often not fully recognised in the economic value they can generate in their own right (the direct, indirect and induced effects in this context). This is particularly the case for air cargo. Its intrinsic linkage to the functioning of the trading economy means its value stretches far beyond its operational economic impacts.

Total Impacts

- 6.10. Combining operational and wider impacts suggests that air cargo night flying in total supports nearly €1.2 billion in GDP and 15,760 jobs. As we have seen, the great majority of this impact accrues to companies in the wider economy that are central to Ireland's trading economy. The total impact of air cargo night flying is summarised in Table 6.2.

Table 6.2: The Total Impact of Air Cargo Night Flying at Dublin Airport

	GVA (€m)	Jobs
Direct	€ 27	330
Indirect	€ 15	190
Induced	€ 16	230
<i>Operational Impact</i>	€ 59	760
<i>Wider Impact</i>	€ 1,118	15,000
Total Impact	€ 1,177	15,760

Source: York Aviation.

Conclusions

- 6.11. Air cargo night flying has a significant impact on the Irish economy, primarily through the role that it plays in supporting productivity in key trading sectors of the economy. At 2018 demand levels, we estimate that it supported around €1.2 billion in annual GDP and around 15,760 jobs.
- 6.12. The planning conditions associated with the opening of the second runway at Dublin have the potential to significantly damage night time cargo operations, undermining their ability to support this economic value, threatening Dublin's position as a key European business location and damaging infrastructure investments already made by key air cargo operators.

7. Conclusions

- 7.1. Air cargo night flying has a significant positive impact on the Irish economy. At 2018 demand levels, we estimate that it supported around €1.2 billion in annual GDP and around 15,760 jobs. The great majority of this impact (€1.1 billion and 15,000 jobs) comes from the role that air cargo night flying plays in supporting Ireland's trading economy.
- 7.2. Air cargo is generally used to move mission critical, high value / time sensitive goods and packages for which no alternative modes of transport can meet their requirements. This is especially true of cargo flown at night. The night period is used to move items whose value is to a significant degree defined by their speed and / or certainty of delivery and for whom international delivery times need to be measured in hours rather than days and guaranteed delivery times and next business day delivery are key features of the offer. This could mean essential financial, legal or business documents, critical manufacturing components or spares, perishable produce, high value consumer goods or time expiring medical or pharmaceutical products. The night provides vital time between business days when goods / packages can be moved with minimal loss of productivity or time to market or user.
- 7.3. Express / priority cargo services are about mission critical timeframes, fine margins and speed. Downgrading the system at any point means that it will not work. If the operators could not use night flying to / from Dublin, then the express operators' global network of operations will not be changed to accommodate restrictions at Dublin Airport. Dublin will simply become an offshoot that is served differently and at a lower level of service, probably involving trucking freight to destinations within Europe or at least to a European airport to be flown, with consequent impacts for shippers and purchasers from the time lost.
- 7.4. From an economic perspective air cargo night flying and the services it enables are about productivity. Air cargo night flying allows the Irish economy to function more efficiently, allowing individuals and companies to add more value, using the 'dead' time at night to either move goods to market or to bring supply chain components to Irish based companies or to bring time sensitive goods to end users. Through this process, it:
 - enables trading relationships;
 - makes Ireland a more attractive place to locate and do business;
 - supports advanced logistics and supply chain functions;
 - means that Irish based companies can provide the highest levels of customer care and after sales service;
 - from an Irish consumer point of view, air cargo night flying supports consumer choice.
- 7.5. Dublin Airport is an essential trading port for Ireland's international economy. It accounts for 35% of Ireland's trade by value. More importantly, the trade facilitated by Dublin Airport is focussed on high valued goods. The sectors that use air freight services in Ireland are key, high value added sectors of the economy, such as pharmaceuticals and advanced manufacturing. Dublin Airport is also the only significant option for airlines seeking to serve the Irish market. Night flying is an essential element in this market, enabling particularly the express freight sector. Around 38% of the total volume of air cargo at Dublin Airport is flown at night.
- 7.6. We have estimated that night flights carry around €8 billion worth of exports (6% of Ireland's exports) and around €11 billion in imports (12% of Ireland's imports). Within this total, the express freight operators at Dublin Airport accounted for €3 billion of exports (2% of Ireland's exports) and around €8 billion of imports (9% of Ireland's imports).
- 7.7. The night market for air cargo is primarily an inbound market, dominated by the express freight operators bringing goods and packages to Dublin and the surrounding areas. These shipments are bringing in, particularly, key supply chain components that support high value added sectors of the economy and materials and samples for clinical trials and research critical to Ireland's substantial pharmaceutical sector.

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