

AMADEUS IT HOLDINGS

INFORMATION TECHNOLOGY

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COMPANY REPORT

7 JANUARY 2016

Momentum growth maintained

Flying high with bookings growing

- **Global leader in distribution business** (42.3% market share) and Airline IT solutions (31% share). Both businesses are synergistic.
- **Strong EBITDA margins** showing a consistent growth: the diversification into IT solution has hedging additional risk GDS industry may be suffering
- **Global air traffic growth: typically 4%-5%**; more concentrated in emerging markets (where AMS makes over 40% of its bookings – Latin America, Middle East and APAC)
- **Additional market share gains** are expected in IT solution mainly boosted by Navitaire acquisition. Distribution is estimated to grow due to new agreements and customers in emerging markets
- The company is currently **trading at higher multiples** compared to its global peers but that is justified by the company growth and outperforming results versus its competitors.

Recommendation:

We initiate our coverage by recommending a buy rating and a target price of 46.69Eur. We believe Amadeus is a global leader in the IT and GDS sectors, and it has been showing resilience outperforming the market. Despite the threats of disintermediation and increasing consolidation of OTAs, the company experiences a growing expansion of its customers' base throughout the world.

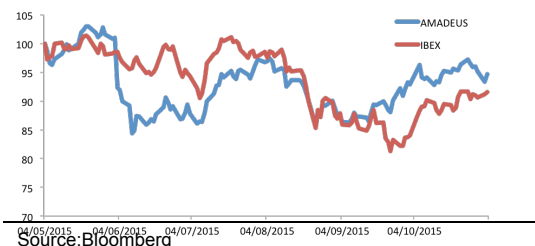
Recommendation: BUY**Price Target FY16: 46.69 €***Upside:* 19.62%**Price (as of 7-Jan-16) 39.03 €**

Bloomberg: AMS SM

Market Cap (€m) 19,771

Outstanding Shares (m) 447.582

Other (...)



(Values in € millions)	2014	2015E	2016F
Revenues	3418	3174	4134
EBITDA	1306	1474	1705
Net Profit	629	704	867
EPS	1.41	1.58	1.95
EBITDA margin	38.1%	40.1%	40.8%

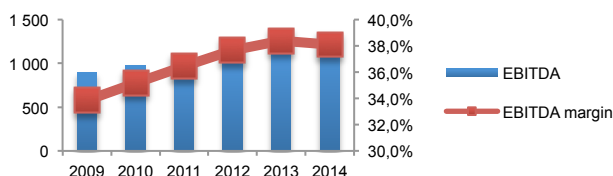
THIS REPORT WAS PREPARED BY FRANCISCA NAVARRO, A MASTERS IN FINANCE STUDENT OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS, EXCLUSIVELY FOR ACADEMIC PURPOSES. THIS REPORT WAS SUPERVISED BY ROSÁRIO ANDRÉ WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL. (SEE DISCLOSURES AND DISCLAIMERS AT END OF DOCUMENT)

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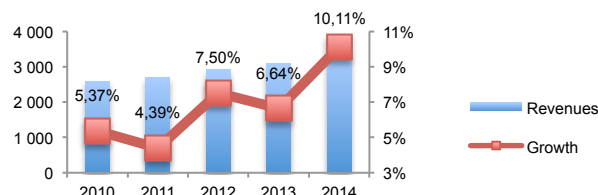
Investment Case

Figure I: Amadeus EBITDA (Eur in millions)

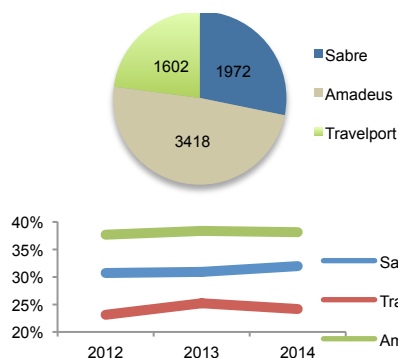


Source: Amadeus

Figure II: Amadeus Revenues (Eur in millions)

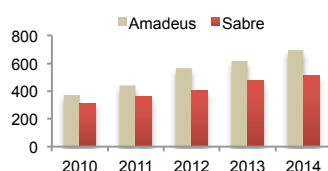


Figures III & IV: Major Players' revenues in 2014 (Eur in millions); EBITDA margin



Source: Amadeus, Sabre and Travelport

Figures V: Passengers boarded



Source: Amadeus and Sabre

Amadeus operates within two business – Global distribution systems and IT Solutions – and is the global leader in both sectors. These two sectors are synergistic businesses. Its performance has been consistently improving showing resilience in its EBITDA growth. Revenues reached its highest in 2014 – 3,418Eur million – value never achieved by its competitors.

In GDS¹ business Amadeus detains a global market share of 42.3%. This sector represents 73.4% of the group's total revenues. Amadeus holds the leading position in all regions except for North America and Latin America, where Sabre has a heavier presence. Nevertheless, Sabre is strong in America but weaker in everywhere else. The company's revenues enhance its positioning in the market: Amadeus's sales represent 170% of Sabre's revenues (figure III), the 2nd largest GDS firm in the world. We expect the volume of bookings done through Amadeus GDS growth since one of the main drivers of its revenues is global air traffic growth that is expected to growth 4.9% annually over the next 20 years. Emerging economies, where Amadeus has been increasing its presence and detains a leading positioning, will mainly drive this growth.

Amadeus has a market share of 31% in IT Solutions business, followed by Sabre. The main drivers of this business are also air traffic growth - due to the transaction fee per passenger boarded – but also due to the continuing migration of airlines to Altéa platform. Considering airlines that are projected to migrate to Amadeus IT platform, it is expected Amadeus will have more than 1 billion passengers boarded in 2018, presenting a CAGR 2014-18E of 10.73% - above the expected annual air traffic growth. This business presents high visibility also due to the length of the contracts – usually 10-15years contracts.

Hence, we projected strong cash flow generation mainly supported by high EBITDA growth. EBITDA growth will be driven by an increase in revenues but also due to scale economies enjoyed by both businesses (but mainly in IT Solutions). We believe shareholder remuneration will be increased (reaching a payout ratio of 60%) because the cash generated by the company will be enough to keep Net debt/EBITDA within the levels set by the company, finance operating needs and pay interest expense.

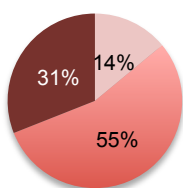
¹ GDS – Global Distribution System

Amadeus: a global leader

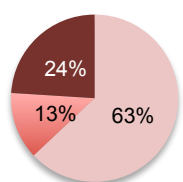
42.3% global market share in GDS

Figure 1: 2013 GDS air bookings share in North America, and in Europe, the Middle East and Africa

North America



EMEA



Amadeus Sabre Travelport

Source: The Beat – Global GDS Share

31% global market share in PSS

Amadeus is a global leader in the travel and tourism industry within the global distribution system sector and IT solutions sector. Amadeus delivers real-time search, pricing, booking, ticketing and other solutions to travel providers and travel agencies within the GDS business. On the technology solutions sector the company offers business process such as reservations, inventory management and operations for travel providers focusing on operational efficiency and enhancing customer's experience.

Amadeus, founded in 1987 by Air France, Iberia, Lufthansa and SAS as global distribution system, was created with the purpose to allow the access of airlines providers' inventory with travel agencies and consumers in real time. At the time the intention was to offer to European airlines and OTAs² an alternative to Sabre, a GDS³ based in U.S. Travel providers provide their content to Amadeus (at zero cost) getting access to travel agencies around the world. Amadeus generates revenues from travel providers when a booking is done in its system. On the other hand, Amadeus pays an incentive fee to travel agencies when a booking is done in its system. The company currently has a market share of 42.3% of Global Distribution Systems. GDS revenue drivers are correlated with GDP growth (such as disintermediation, air traffic growth). Therefore, given the heavier presence of Amadeus' GDS in emerging markets compared to its competitors, the company is expected to outperform participants in this business since World Real GDP is expected to growth 3.1% annually within the next ten years with Asia and Africa leading the growth with yearly GDP change of 4.3% and 4.5%.

Amadeus provides travel providers (mainly airlines but also include hotels, airports, rail markets) IT solutions. A transactional fee is paid to Amadeus for the use of the technology. Passenger Services Systems are part of the core business processes for airlines that were initially developed by the airlines themselves in the 1960s and 70s. Amadeus holds a market share of 31% in PSS⁴ business. Nowadays, the airlines application market has more recently shifted to third party suppliers, since there are now a number of quality offerings in the market. Some of the Amadeus's competitors work on an outsourcing basis, outsourcing the in-house systems to a services seller which is uniquely developed to the client, but typically charges a fixed price.

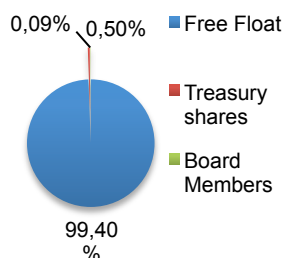
² OTA - Online Travel Agencies

³ GDS – Global Distribution System

⁴ PSS – Passenger Services System

Shareholder structure

Figure 2: Shareholder Structure



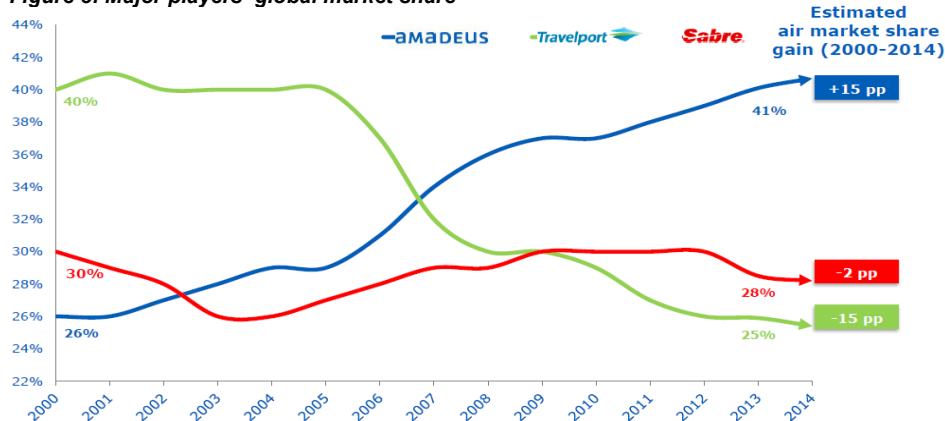
Source: Amadeus

Amadeus' shareholder structure is composed 99.4% by free float, 0.09% by Board members and 0.5% by Treasury shares. The top 5 investors included in the company's free float are MFS Investment Management (5.017% of direct voting rights), Government of Singapore Investment Corporation Pte Ltd (4.925% of direct voting rights), Blackrock Inc. (3.832% of indirect voting rights), Fidelity International Ltd. (2.069% of indirect voting rights) and Invesco Ltd (2.003% of indirect voting rights).

Global Distribution Systems Sector

3 major players, Amadeus, Sabre e Travelport, control the Global Distribution Systems sector worldwide. The three together hold more than 90%⁵ of the market, with the 4th participant having a market share of just 6%. This sector has some barriers to entry, as a large investment would be needed to replicate GDS technology. Historically capital expenditure required by Amadeus has been between 9-13% of its annual sales. Consequently GDS tends to an oligopolistic business. Amadeus is a clear global leader, currently holding a 43% market share, showing consistency in its market share gains over the years.

Figure 3: Major players' global market share

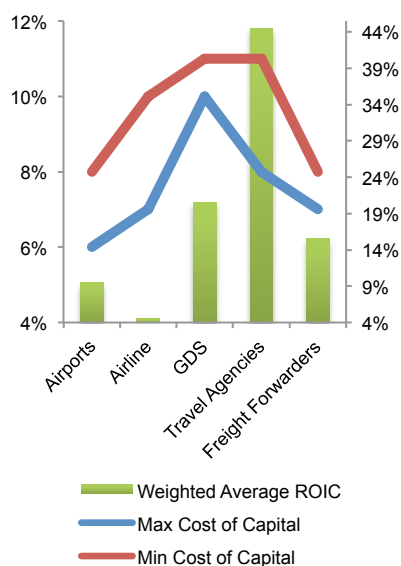


Source: Amadeus

GDS, also known as Computer Reservation system, works as an intermediary between travel agencies and airlines. When a customer approaches an online travel agency searching for airlines tickets possibilities, these agencies access the airline's inventory through the global distribution system supplied by companies like Amadeus. By connecting a large number of travel providers to a large number of travel agencies, the company helps to create value in the distribution chain. The more agencies airlines are exposed to, the more travellers

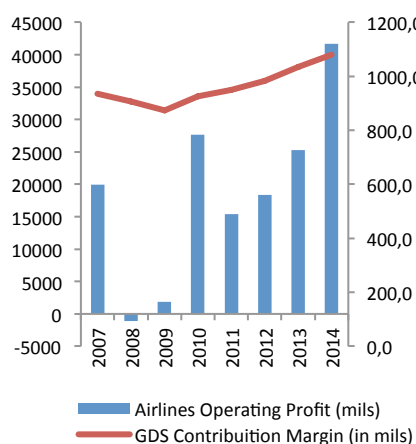
⁵ Numbers of travel agency air bookings according to Amadeus estimates.

Figure 4: Industry's companies ROIC and Cost of Capital



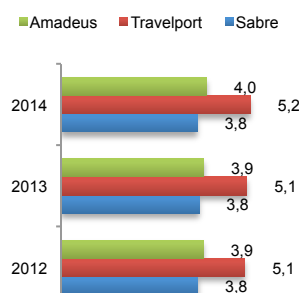
Source: Mckinsey for IATA

Figure 5: Financial Performance



Source: ICAO and Amadeus

Figure 6: Average booking fee in Eur (air and non air booking)



Source: Amadeus, Sabre and Travelport

(weather business or leisure travellers) have access to their flights. In the travel agencies' perspective, it allows them to have a wider range of products to offer their clients, therefore increasing their possibility of selling tickets. This is called the network effect (see appendix A). Currently, Amadeus has a customer base of travel providers of 705 airlines, more than 235,000 hotels properties, 248 tour operations, 44 car rental companies, 51 cruises and ferry lines, 90 rail operators and more than 18 insurance provider groups.

GDS follows transaction-based model. Travel providers provide their content to Amadeus, free of cost obtaining access the distribution system connecting the inventory system of travel providers to travel agencies around the world. When a booking is done, travel providers pay to Amadeus a booking fee. Concerning travel agencies, Amadeus offers real-time search, booking, ticketing back-office solutions specifically to TAs⁶. However travel agencies cannot afford to use more than one/two GDS systems: it requires training equipment and accounting complexity. Hence, when a booking is done, Amadeus pays an incentive fee to TAs, creating motivation in agencies to keep using its system. Travel agencies operating with Amadeus GDS platform pay an IT fee for technology and functionality (Appendix B).

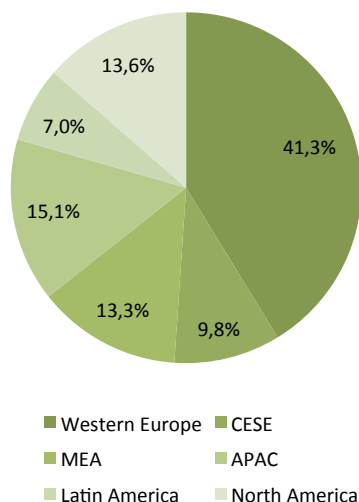
Revenue Inflows despite airlines' performance

The bookings' pricing level is defined based on the origin of booking with respect to the prime market of the provider, depending on the value it generates to travel provider: country bookings are the lowest value bookings, regional bookings are medium value and international are the highest bookings value. Amadeus was the pioneer GDS Company adopting this pricing model (in 2004) reasoning why it started gaining market share from Travelport and Sabre. Currently, all GDS firms use the same value-based pricing model. Bookings revenues have shown to be resilient since what drives fees are booking volumes made through TAs. The volume of bookings is linked to air traffic evolution, which in turn is correlated to GDP growth. Amadeus takes the commission fee regardless the price charged by the travel provider and so it does not depend on the providers' revenues performance (figure 4 e 5): if airlines are keen to sell more seats to increase the load factor, they will have to lower the price charged by ticket, but the fee commission delivered to Amadeus will remain the same. In fact, it is actually positive for Amadeus that airlines lower their prices since number of bookings will increase, leading to higher revenues.

⁶ TA – Travel Agencies

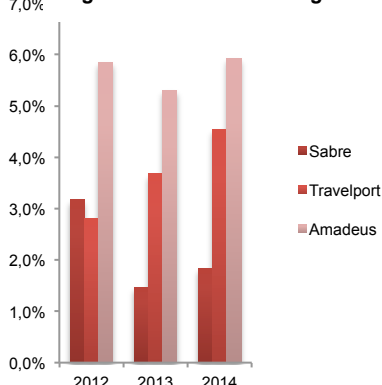
Amadeus GDS vs Industry

Figure 8: Amadeus Geographic split of air bookings 2014



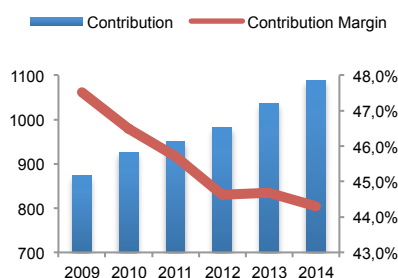
Source: Amadeus

Figure 9: GDS revenues growth



Source: Amadeus, Sabre and Travelport

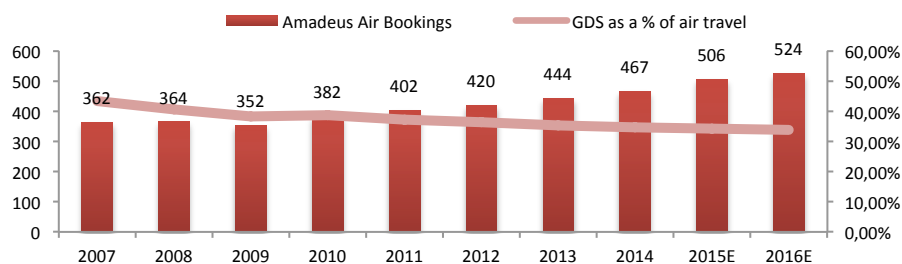
Figure 10: Amadeus GDS contribution (in millions of Eur)



Source: Amadeus

The Contribution of GDS presents a low volatility over the years also due to mix shift in value-based pricing model – average bookings fee has been gradually growing since 2009. However GDS contribution margin has been showing some deterioration signs with a decrease of 3.2% since 2009. GDS has been diminishing its share of air travel. This is fuelled by disintermediation from some airlines but also air travel is growing faster than online bookings. Despite the fact the GDS share of air traffic is weakening, Amadeus's market share has been increasing over the past years and mainly in emerging markets: these are expected to drive growth in the upcoming years with Asia Pacific and the Middle East & Africa most likely to lead that growth. These 3 regions together weighted 35.3% of total air bookings in 2014.

Figure 7: Amadeus bookings (millions) and Global GDS share of air travel industry



Source: Amadeus and NOVASBE estimates

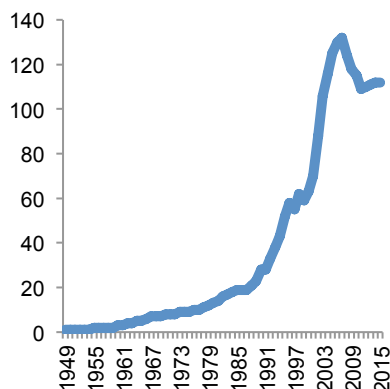
International travel is the one that brings more value to bookings revenues and this segment continues to rise. It is harder for airlines to sell international flight tickets directly from their websites and so the best way to increase its high value flight selling is by GDSs. Therefore this segment is unlikely suffer disintermediation with international travelling being a consist driver for GDS.

Barriers to entry

As said before, this sector benefits from high barriers to entry due to its network effect. Hence, GDS companies benefit from the relation established between travel suppliers and travel agencies. Travel agency contracts range from 3-10 years for major travel agencies and 1-5 years for local travel agencies, providing good visibility to Amadeus' customer base. Plus, the advanced technology that is constantly being upgraded requires high levels of investments.

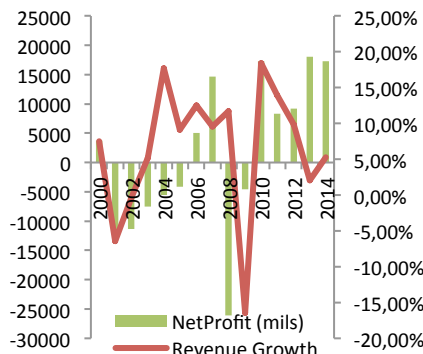
Hence, if a new company wants to enter the business would have to face hard obstacles to succeed; (i) it has to get a wide airlines network to add to the platform; (ii) in order to negotiate with airlines the company would have to offer a low fee (since it still has a small costumer base) – thus travel agencies would be

Figure 11: Global LCC presence



Source: ICAO and NOVASBE estimates

Figure 12: Airlines' Financial Results in mils of US\$



Source: ICAO

receiving a lower incentive fee and it would most likely refuse to use the new GDS (recall travel agencies do not use more than one or two GDSs); (ii) even if travel agencies wanted to leave to the new company's GDS, they would have to wait until the end of the contract they have with the current GDS supplier; delaying the migration to new entrance GDS and increasing the risk of failure.

Risk Factors

The main risk for travel distribution industry is the disintermediation. This has been fuelled by the increasing growth in market share gains of LCCs⁷, which sell their tickets partly through their own websites. Only when LCCs experience a slowdown in growth, they consider using GDS. On top of that, airlines have been trying to increase its bookings through direct channels. This is due to high costs airlines incur with GDSs: in 2012 it was estimated that roughly US\$7 billion in GDS fees were paid by airlines, which was over twice the industry's expected net profit for that year⁸ (figure 12). The GDS industry is growing at a slower pace than RPK-growth driving to the decline of the industry's share of total bookings.

However, airlines are also taking risk by not using GDSs. If the airline's competitors are using the GDS and the airline company is not, TAs will not have access to the airline's tickets so it is unlikely the airline tickets will be sold by them.

Amadeus also faces other risks, such as operational risk in the sense that it runs and manages its own data centre. If a failure in the system occurs, it could cause loose a part of the business. Finally, GDS have been experiencing many changes in regulations that affected its businesses and it is not free of changing again.

Understanding the GDS risks and the value of network effect

Global distribution systems were born in the pursuit of satisfying the need to supply the increasing air traffic demand that airlines were enjoying in the 60's – paper passenger lists and telephone confirmations were proving to be insufficient. At the time, initial investment of such technology would be comparable to the cost of buying six Boeing 707 jet airplanes - US\$4.3 million each in 1955⁹. The airlines that firstly developed a CRS experienced a reduction of 30% in reservations staff (decreasing operating expenses). This system, once installed in travel agencies, start to progressively increase passenger revenues

⁷ LCC – Low Cost Carrier

⁸ Source: The Economist: The ineluctable middleman (2012)

⁹ Source: Bowers, Peter M. *Boeing Aircraft since 1916*. London: Putnam Aeronautical Books, 1989

for airlines, therefore encouraging other airlines to adopt the same technology and develop their own CRS.

Each GDS had different techniques to execute similar tasks. Hence, due to the complexity, equipment and training required; travel agencies would only accept to use 2 or 3 different GDS that allowed access to multiple airlines. Consequently, airlines start allowing their bookings into other carriers' GDS.

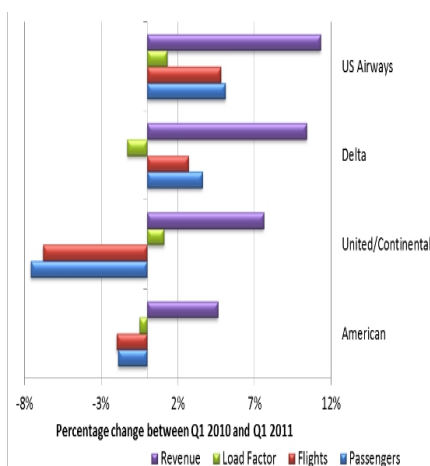
The (airlines) owners of each GDS start revealing an opportunistic behaviour by setting their flights at the top of the system, that was consulted by TAs, regardless the charging fare – other airlines could be offering the same flight at a lower fare and would still appear after the owners. In 1983, in U.S., some regulations were established to regulate the business: owners of GDS were not allowed to rank flights based on carrier identity and they had to provide the same accurate and reliable information to all airlines and TAs enrolled in the platform. Additionally, all airlines that owned GDS business had to offer their content (flights) to all other GDS too.

By 2000, 15% of total bookings came from OTAs¹⁰ that were using GDS. Airlines assumed intermediation would eventually disappear and customers would buy flights from airlines' websites. Thus, owners of CRS sold part or all of their participation of GDS companies. At the time, Lufthansa, Air France and Iberia sold part their Amadeus' shares.

However, the loss of direct commission from airlines faced by travel agencies made them more beholden to GDS that besides offering back-office computing also pay them an incentive fee. In 2002 the U.S. suffered a deregulation that no longer obliged airlines that own a GDS to be signed in all other GDSs and GDS now could privately negotiate with each different airline/TA: airlines could only give to GDS their highest fares or could allow GDS to access lower fares and enjoy discounts on booking fees.¹¹

Airlines efforts to bypass GDS were not succeeding. American Airlines, for instance, attempted to override GDS through to what they called at the time Source Premium policy: it planned to charged travel agencies a fee per booking made through GDSs except for bookings made through two specific GDSs the airline had a contract with that agreed to charge lower fees than other GDSs. Since contracts between TAs and GDSs are medium-long term, even if TAs wanted to leave the current GDS to migrate to one of the two GDSs suggested by the airlines, they couldn't. American Airlines was then risking travel agencies to steer passengers to other airlines flights leaving the company worse off than

Figure 13: change in Results of American Airlines and Main Competitors (US Domestic Market)

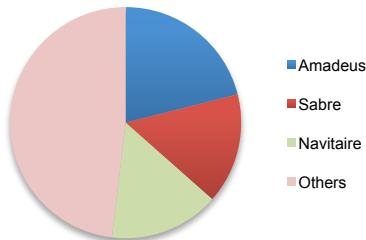


Source: LSE article from 2014
"Losing access to online distribution platforms cost American Airlines more than \$50 million in revenues"

¹⁰ OTAs – Online Travel Agencies

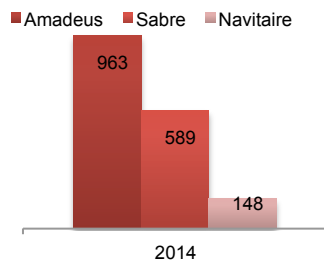
¹¹ Source: Benjamin Edelman. *Distribution at American Airlines*, 2009

Figure 14: Reservation Systems' 2014 share of passengers boarded



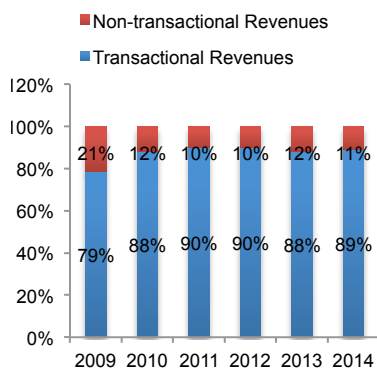
Source: Amadeus

Figure 15: Revenues in millions of Eur



Source: Amadeus, Sabre and Navitaire

Figure 16: Amadeus percentage of transactional and non-transactional revenues of IT sales



Source: Amadeus

when it was paying normal GDS fees. Hence, the company decided not to go forward with this policy.

In 2011, American Airlines attempted again to escape to GDS fees. The company created its own reservation system to permit travel agencies to access the carrier's inventory avoiding the GDSs. In response, most GDSs blocked the access of their platforms to the airline's inventory. Consequently, during the first quarter of the same year, the carrier was not capable of selling several tickets to OTAs leading to a huge reduction in revenues, load factors, passengers and flights as it is shown figure 13. The revenue loss incurred during this quarter is estimated to be over than \$50 million.¹²

IT Solutions Sector

IT solutions play an important role in tourism and air travel industry. Amadeus detains 31% of market share within the full service PSS business. The extensive portfolio of technology solutions allows airlines to address its key operational requirements to optimize financial and management performance. Altéa suite, Amadeus's PSS, is composed by Altéa Reservation, Altéa Inventory, Altéa Departure Control and e-commerce.

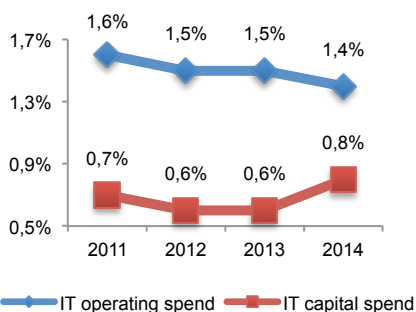
In figure 14 Amadeus' share of reservation systems does not correspond to Amadeus estimated market share because Amadeus is not competing in the LCC segment, the same way that Navitaire, for instance, is not in the full service need.

Altéa Reservation delivers an all-in-one service across all sales channels through reservation technology between airlines and travel agencies. It enables airlines to manage their books, fares and tickets. Altéa Inventory is used to enabling the airline to manage and control availability in real time by planning schedules, monitor seat capacity and connected fares on a flight-by-flight basis. Altéa Departure Control allows flight departure monitoring as customer check-in, baggage management, and other functions related to passenger flight boarding. E-commerce focuses on delivering a wide range of solutions that aids airlines to lower distribution costs and compete effectively in the fast-growing online market. Additionally, Amadeus offers a range¹³ of IT solutions to support airlines in procedures related to customers, such as Amadeus Ticketing Platform, Revenue Integrity, Payment Solutions, Revenue Management, Ticket Changer, Airline Ancillary Services, Electronic Miscellaneous, Passenger Revenue Accounting and Loyalty, etc. Although these solutions have been designed to incorporate

¹² Source: LSE article from 2014 "Losing access to online distribution platforms cost American Airlines more than \$50 million in revenues"

¹³ Range of IT solutions also referred as modules

Figure 17: IT & Telecoms spend as % of airlines' revenue



Source: SITA

Figure 18: Amadeus' PB vs Passenger demand growth

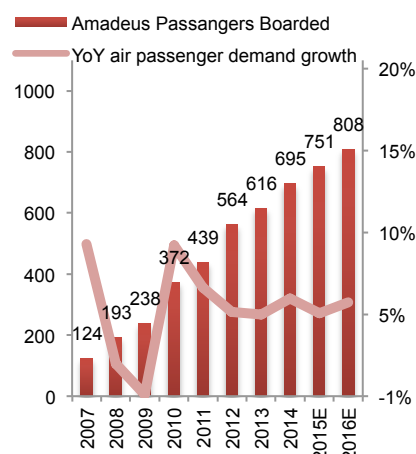
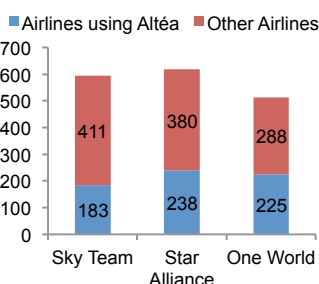


Figure 19: Passengers boarded in 2014



Source: Sky Tam, Start Alliance, One World and NOVASBE estimates

Amadeus Altéa suit, airlines have the ability to choose which solutions and features they need to integrate their systems and so those solutions can also be used on a stand-alone basis with other in-house or PSS systems supplied by other companies.

Strong market fundamentals

Amadeus operates under a transaction-based business model linked to global travel volumes. IT solutions business is mainly driven by transactional revenues (89% of IT solutions revenues in 2014 in figure 16) thus depending on the number of passengers boarded in each one of the airlines the company has a contract with. Amadeus also profits from non-transactional revenues that refers to services like consulting and implementation of Amadeus technology. According to the *Air Transport Industry Insights report* done by SITA¹⁴, the airline IT spend as a percentage of revenues has remained stable over the years (around 1.5% over the last 4 years – figure 17) and is expected to be kept like this in the following time. Airlines' revenues have been increasing; meaning the market for technology in air transport has been rising (figure 18).

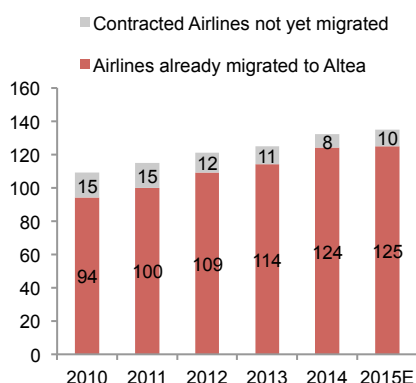
The pricing model allows airlines the possibility of replacing fixed R&D and maintenance cost by a variable cost that vary with passenger volumes, thereby better matching the airlines' revenue. This model also links Amadeus' revenue to global travel volumes instead of linking it to travel spending, thus reducing the volatility Amadeus' operating results.

Amadeus Altéa Suite is the main IT platform provider of two thirds of Star Alliance members, three quarters of one world carriers and more than of the members of SkyTeam (figure 19). These represent roughly 90% of total passengers boarded in 2014. The Amadeus Altéa Suite facilitates closer integration between partner airlines that need to share availability, fares, and customer and booking information, enabling a seamless customer experience across alliance members.

The Amadeus Altéa approach entails continuous upgrades, having the ability to respond to changes in market conditions. It provides IT solution to different level of air transport sophistication: airlines carrying 70 million to below 1 million passengers annually. The customer base for Altéa has been growing and has quite good expectations of migrations in a near future. Major airlines such as Japan airlines and Southwest (domestic flights), that are expected to migrate to

¹⁴ SITA is an airline IT solutions provider

Figure 21: Amadeus contracted airlines



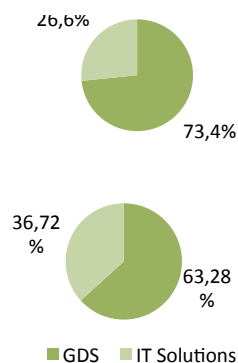
Source: Amadeus and NOVASBE research

Figure 22: Amadeus future migrations/exits

Airlines Agreements			
Migration date/Expected Exit date	# Passengers/year (m)	% year	
2015			
Thomas Cook	16,5	50%	
Vistara	5	100%	
Southwest (international flights)	4	100%	
ANA (international)	7	100%	
2016			
Thomas Cook	16,5	50%	
Caribbean	3	100%	
China Airlines	14	100%	
Swiss	16	100%	
South Africa			
Olipon airways (international)	6	100%	
Air Berlin	-30	100%	
2017			
Japan Airlines	40	20%	
Southwest (domestic flights)	135	100%	
2018			
Japan Airlines	40	80%	
TAM	-40	100%	

Source: Amadeus and airlines' websites

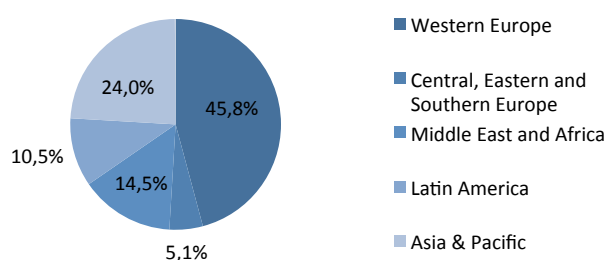
Figure 24: Weight on revenues and contribution margin, respectively



Source: Amadeus

Altea suite solution within 2 years, have together approximately 175 million passengers boarded annually (figures 21 and 22). These agreements have enough volume of passengers to offset future exits: Air Berlin and TAM are leaving Amadeus IT platform, decreasing the PB of Amadeus by 70 million. IT solutions presence is stronger in Western Europe than in other countries. However future migrations are key on driving Amadeus to a stronger positioning in other regions (figure 20).

Figure 20: Geographic split of Amadeus PB in 2014

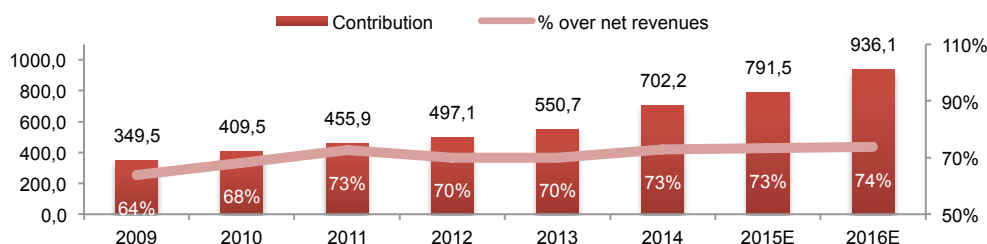


IT Solutions segment has a higher contribution margin than GDS

IT solutions revenues represented 27% of total revenues and 37% of total contribution. GDS, on the contrary, displayed 73% of total revenues and exhibited 63% of total contribution (figure 24). IT solution had a higher presence in contribution than in total revenues meaning the variable costs are lower in IT than in GDS.

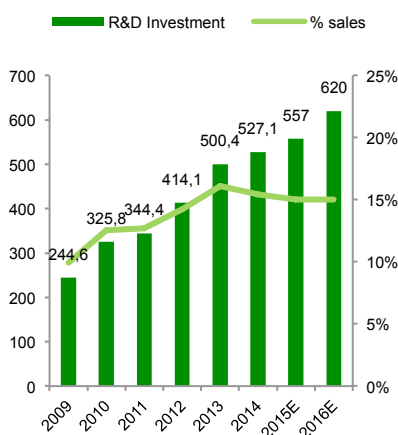
With contribution margins above 70%, IT business displays profit margins above the group average. As shown in the graphics (figure 23 and 24), IT solutions benefits from high scale economies: the marginal cost of adding a new customer to the Altea suite is small and that allows Amadeus to provide a continuous profitability performance, with increasing contribution margins each year.

Figure 23: Contribution margin and % over net revenues



Source: Amadeus

Figure 25: R&D investment



Source: Amadeus and NOVASBE research

High Barriers to Entry

IT Solutions also benefits from high barriers to entry due to the length of contracts: travel providers typically sign long-term contracts with 10-15 years duration¹⁵. Switching of IT platform can be very costly for airlines: additional costs of training and the opportunity cost of the employees' time spent on learning the new technology. Barriers to entry are further enhanced by high capital expenditure requirements: the more airlines migrate to Altéa, the more Amadeus will be benefiting from further economies of scale and other players may therefore find it challenging to take market shares away from Amadeus. Over the years, many airlines have tried to develop these systems in-house but most of them ended it up by outsourcing IT platform since it was too costly develop their own because airlines would not enjoy economies of scale – Amadeus has multiple customers.

IT Solutions mitigates risk in distribution

Amadeus, Travelport and Sabre started offering IT solutions to Airlines to reduce the risk impact in GDS. Travel distribution is subject to a number of risks that we discussed above in this report. The most well known is the on going disintermediation. IT Solutions business mitigates disintermediation: the clients concentration remains high in IT Solutions, thus reducing exposure to travel distribution through revenue diversification.

Over the last 10 years, airline industry has been facing some consolidation mainly due to the difficulty of performing well within an underperforming sector. Take for example airlines based in U.S such as American, Delta, United and Southwest; that control nearly 86% of domestic flights¹⁶. Further consolidation may represent a risk for companies like Amadeus: on the GDS side, disintermediation can increase. On the other hand, IT solution companies might loose their bargaining power when negotiating the migration features. However, IT solutions enjoy long term contracts that allow Amadeus to secure its expected revenues for many years. Plus, over the last years, with the ongoing consolidation, what the market trend have been to migrate from in-house developed PSS to a third party platform provider. However, governments will keep controlling the market, by creating regulations that minimize consolidation.

¹⁵ Source: Amadeus

¹⁶ Source: "Airline industry: Consolidation calls for regulation" 2015, Global Travel Industry News

Thus, barriers to compete between airlines won't go down and companies like Amadeus are protected from regulation¹⁷.

Airport IT

Figure 26: Total IT & Telecoms spend and airport



Source: SITA

Amadeus started its Airport IT business in 2013: an integrated suite of solutions for airport operations. Airport IT spend has been rising and valued approximately 6.7 billion of US\$. The leading companies offering IT solution are Amadeus, Rockwell Collins, SITA and Ultra Electronics Airports Systems. Since this market is highly concentrated, these companies are trying to differentiate their offering through cost effective solutions.

This segment has been growing at a good pace for Amadeus: Munich Airport, Copenhagen Airport and MAP Handling were the pioneer customers for Amadeus. Amadeus is investing heavily to build a comprehensive airport IT portfolio. In 2014 it acquired UFIS Airport Solutions, a leading player in the airport IT business for the last 20 years, during which time the company has won the trust of major airports across the world.

Until now, Amadeus has experienced a continued momentum in the market with its ACUS offering (Amadeus Airport Common Use Service). In 2015, Amadeus got its first customer in Australia, Perth airport that expects to reduce its passenger costs by 26% with the implementation of ACUS. Perth airport is fourth busiest airport in Australia by passenger traffic with over 14 million passenger per year. Also in the current year Amadeus signed an agreement with the Avinor Group, which is operating 46 airports in Norway, to adopt its ACUS.

Hotel IT & Rail IT

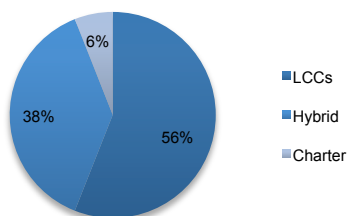
Amadeus is developing hotel management solutions to enable hotel business and brand revolution. So far Amadeus has acquired two companies core in this business: (i) Newmarket – provides of cloud-based group and event IT solutions to the hotel industry and serves around 22,000 properties in 154 countries; (ii) Netherlands-based Itesso BV, a provider of cloud-native property management systems (PMS). Itesso currently provides PMS technology to 1,800 properties worldwide.

The rail industry is in expansion: high-speed rail networks are expanding due to liberalization in Europe and consumer demand for rail travel is increasing. Amadeus currently works with more than 90 railways on local and global solutions. It had over 30 million rail booking last year across 195 different countries.

¹⁷ Source: Industry perspectives: 2015 Aviation Trends, PWC

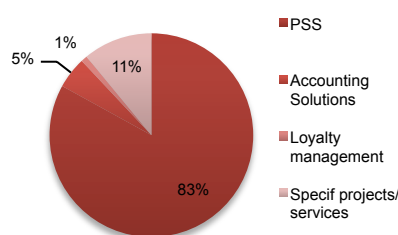
Recent M&A: Navitaire

Figure 27: Navitaire's PSS customer split



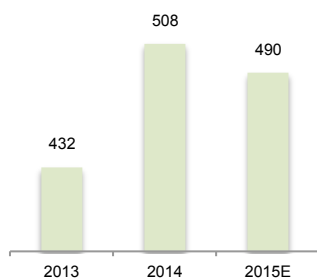
Source: Amadeus

Figure 28: Navitaire's revenue split



Source: Amadeus

Figure 29: Navitaire's PBs



Source: Amadeus and NOVASBE research

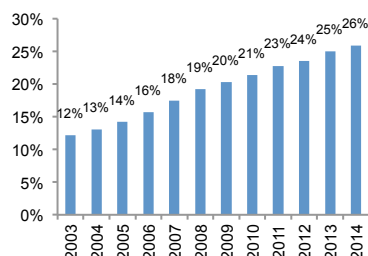
On July 1 2015 Amadeus has agreed to acquire Navitaire, an IT solutions company, for US\$830m; at 14.2x current year FCF and 13.8x current year EBITDA. The transaction will be 100% debt financed. Amadeus' acquisition of Navitaire will result in proforma Net Debt/EBITDA for Amadeus of 1.6x 2015E.

Navitaire delivers industry-leading technology services for low-cost and hybrid-carrier segments of the airline industry and has a global customer base of more than 50 operators in 29 countries throughout EMEA, APAC, Latin America and North America. Some of its clients are Ryanair; Vueling; Jetstar; GermanWings; AirAsia. It serves its customers through a transaction-based model and provides its solutions as software-as-a-service. Navitaire has developed loyal customer relationships - average client retention rate of 95%. The company's key competitors include Sabre, SITA and Radixx. The products offered by Navitaire include its PSS (83% of revenue), Revenues accounting solutions (5% of revenue) and loyalty & yield management (1% of revenue). The outstanding 11% of revenues is related to specific services/projects. PSS customer split: 56% LCC; 38% Hybrid; 6% Charter.

Navitaire is geographically complementary to Amadeus Airline IT business, bringing a set of customers which is based throughout the globe and with headquarter operations in the U.S. Amadeus plans to run Navitaire mostly as a separate business from the rest of Amadeus' Airline IT business, maintaining differentiated brands.

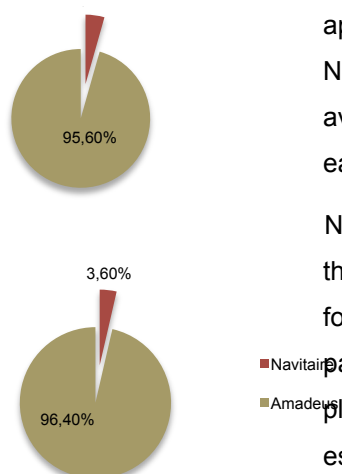
Amadeus expects to reap the benefits of synergies from all opportunities related to cross-selling and upselling and from the ability to deliver a double PSS offering to Amadeus' airline group: (i) These two companies have complementary products that can be a benefit to both segments. In some cases, Navitaire is not running some of the products Amadeus has with Altéa. Moreover, Navitaire has developed functionalities for the LCCs that could be valid for some of Altéa's customers. (ii) In terms of evolution, there are some customers that may decide to evolve from a simple functionality – that is what Navitaire is providing – to something that is more complex, like Altéa (but this will depend a lot on the business evolution of the customer). (iii) There could also be distribution opportunities, bringing some of LCCs into Amadeus distribution platform – it is happening in the industry that LCCs are much keener of being part of the travel agency community.

Figure 30: LCCs share of Global Airlines seats sold



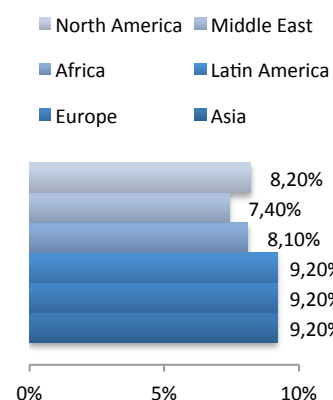
Source: IATA, CAPA and OGA

Figure 31: Weight of each company on Amadeus' group revenues and EBITDA, respectively



Source: Amadeus and Navitaire

Figure 32: Total contribution of Travel and Tourism to GDP in 2014



Source: World Travel & Tourism council

Navitaire had 508 million PBs in 2014; 15% growth YoY; and according to Amadeus the company expects 490 million PB's in 2015. The expected organic growth is positive but what impacted those PBs for Navitaire was AirTran exit as a result of its acquisition by Southwest.

CAGR 2015-2019 of Navitaire's PBs is expected to be between 7%-9%. If in 2019, Navitaire's PBs volume is 667 million (assuming constant growth of 8% annually) and 10% of LCC decide to join GDS; Amadeus could experience an increase of nearly 67 million passengers in its system, leading to higher bookings revenues.

From segment approach, Amadeus is not competing in the LCC segment, the same way that Navitaire is not in the full service need. Therefore, Amadeus is not competing with Navitaire and nor the contrary. Navitaire will represent approximately 4.4% of Amadeus revenue and 3.6% of EBITDA (figure 31): Navitaire average transactional fee per PB is around 0.37Eur, way lower than the average fee charged by Amadeus: this enhances the different market target of each company and also the distinctive products each company offers.

Navitaire has added a number of new clients every year and Amadeus expects this to continue over time. Navitaire just announced VivaAerobus chose Navitaire for its industry-leading technology platform. This LCC carried nearly 4 million passengers in 2014. Moreover, with the complementary fit between both platforms, Amadeus believes it can provide an enhanced solution to the industry, especially to alliances for groups with different range of carriers share business, which is becoming more and more common, and we expect this to accelerate growth in the future for Navitaire. We would expect the company to benefit from an increasing share of business with low-cost carriers (figure 30).

Air Travel Trends

WORLD

Globalization and economic growth have been linked to air traffic growth since the beginning – one cannot go without the other. Has shown in the graphic below, air traffic has been consistently rising at a multiplier of the world real GDP growth valued between 1.3 - 1.6x¹⁸. With a total of 3.3 billion passengers carried last year, the contributions of travel and tourism to GDPs in each different region in 2014 (figure 32) were in the range 7.4%-9.2%¹⁹, highlighting the importance of the sector to economic expansion. Emerging markets are clearly the ones

¹⁸ Source: Amadeus

¹⁹ Source: World Travel & tourism council

bringing more opportunities to growth within airline industries. Despite the progress and growth in EM²⁰, North America and Europe airlines are the leading regions that carried more than half of global aviation. In 1994 North America and Europe airlines possessed approximately 73% of the world traffic but it is estimated that within 20 years, in 2034, their combined market share will drop to 38% with Asia Pacific and Middle East airlines capturing market gains in world traffic²¹.

Figure 33: World GDP and Air traffic demand

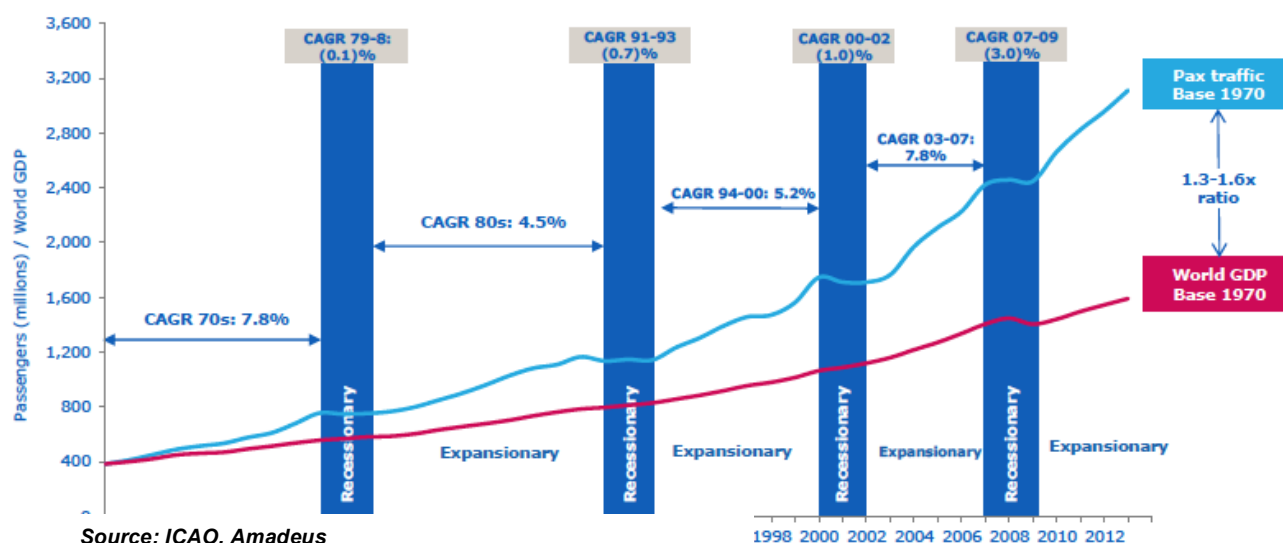
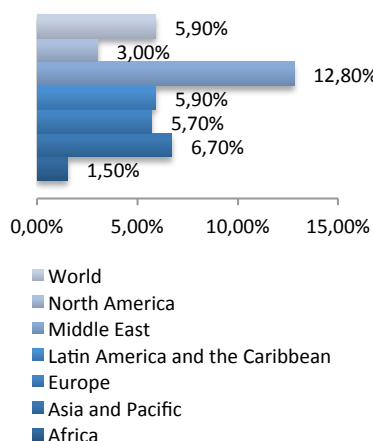


Figure 34: Air Traffic Growth



Source: ICAO

In each different region, airlines are faced with different market conditions regarding specialized requirements. Still, they all face many common challenges such as oil price volatility (decisions on weather airlines should hedge this risk and but which amount), emission control regimes, increasing airport congestion, technological change and the growth of low cost carriers. These fluctuations affect aviation around the world.

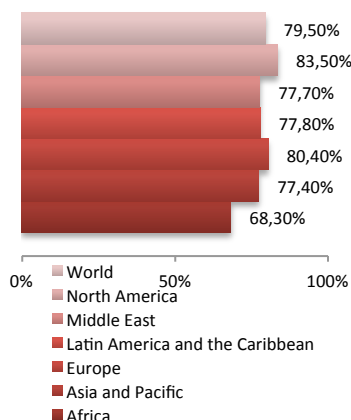
Over the past years, LCC gained short-haul market share and have been driving single-aisle growth: they have been able to provide an ampler range of destinations. Due to the speedy expansion of LCCs it is expected that by 2034 LCC's will enjoy market share gains in air traffic of 21%²². During the last year, Amadeus has made distribution agreements with 15 new hybrid and LCCs – to date 79 LCCs have become Amadeus distribution partners. Bookings from travel agencies on LCCs were up by 16% year-on-year during 2014.

²⁰ EM – Emerging markets

²¹ Source: Boeing - Current Market Outlook 2015-2034

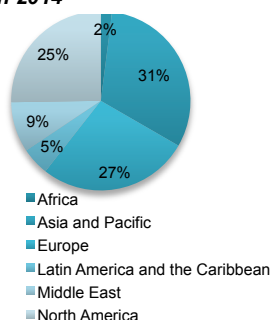
²² Source: Airbus - Global Market Forecast Book

Figure 35: Airlines' Load Factors 2014



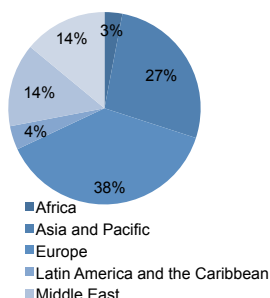
Source: ICAO

Figure 36: Air Traffic Market Share in 2014



Source: ICAO

Figure 37: Air traffic International Market Share in 2014



Source: ICAO

In 2014 RPK²³ performance grew nearly 6%²⁴ - airlines' load factors were closed to 80%: efficiency and customer experience within airlines are partly due to IT spend by airlines, weather its in-house developed or through a third party.

ASIA

Each year there are approximately 1 billion passengers flying to/from/within Asia and it is expected that up to 2034, 100 million passengers will enter the market per year²⁵. This increase in demand will lead to a higher number of airlines supplying passengers and to an upsurge of airports. Airlines' capacity has grown 7% annually and although North America and Europe hold the biggest share of the market, Asia's network carriers include some of the largest and oldest airlines in the world, including Korean Air, Air China and JAL.

Over the past 10 years, LCCs' average annual growth has been 24.5% compared to a 2.2% and 13.4% growth in North America and Europe, respectively²⁶. LCC presents penetration of approximately 60% in domestic markets in Emerging countries within the region, one of the highest penetration rates when compared to other regions²⁷. From the top 15 successful LCCs in Asia, Navitaire supplies IT platform to 6 LCC and Amadeus to 3.

Regarding future demand, it is estimated that Asia will be the largest travel market in the world, growing at 6.1% annually over the next 20 years. The bookings increase of Amadeus in Asia-Pacific has been driven by the contracts with powerful Asian airlines such as Singapore Airlines, EVA Airways, Garuda Indonesia, Thai Airways, Asian Airlines, All Nippon Airways – the international passengers business and Korean Air. This shift towards Asia-Pacific will continue, as we have a number of migrations of Asian carriers million passenger per year.

EUROPE

During 2014, Europe's GDP grew by 1.4% but it is expected that up until 2034, the region will grow 1.8%, with an increase of 3.8% per year in air traffic. Airlines are performing well in Europe and according to the Association of European airlines; its members carried more 4.1% passengers in 2014 compared to the year before. However LCCs play an important role in passenger traffic as members of European Low Fares Airline Association presented a 9.1% growth regarding passenger traffic over 2013. Roughly 51% of both GDS bookings and passengers boarded on Amadeus' platforms come from Europe, meaning

²³ RPK – Revenue Passenger Kilometres, often used to measure air traffic growth

²⁴ Source: ICAO

²⁵ Source: Boeing - Current Market Outlook 2015-2034

²⁶ Source: Boeing - Current Market Outlook 2015-2034

²⁷ Source: Airbus - Global Market Forecast Book

Figure 38: Air traffic domestic market share in 2014

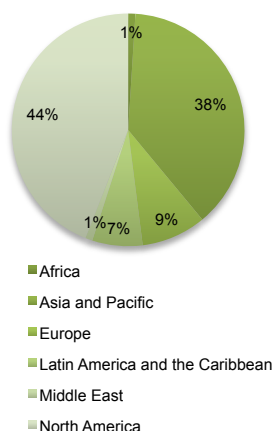
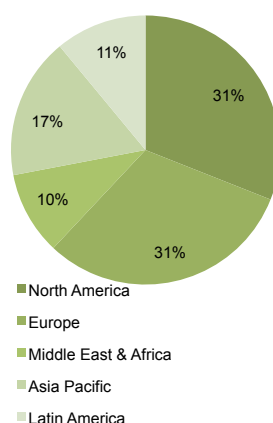


Figure 39: Total GDS industry Air bookings 2014



Source: ICAO

Amadeus it is still highly dependent on air traffic performance in Europe. Navitaire will help to diversify this concentration along with future migrations and contracts in EM.

NORTH AMERICA

In North America, airlines' net income represented in 2014 two thirds of the projected net income for the entire global aviation industry²⁸ One of the main drivers of such performance was the oil prices reduction that by decreasing operating expenses, pushed earnings up. Traffic passenger for network airlines and LCCs increase of 2.5% and 3.6%, respectively.

The long term air traffic outlook for North America is positive with an expected market value of US\$640 billion supported by a forecasted grow of 3.1% per year. Although NA is one of the regions where Amadeus has a weaker presence, this optimistic outlook in the region is positive for Amadeus: Southwest, an airline that carries 135 million passengers annually, signed a contract for Amadeus Altéa Suite to support the carrier's US domestic operations. Southwest wishes to fully migrate to the Amadeus Altéa platform for both international and domestic flights in the coming years.

MIDDLE EAST & AFRICA

Nearly 80% of the world's population live within an 8 hours flight from the Gulf. This positioning allows Middle East carriers to gather traffic at its major centres and offer direct routes to passengers. Nevertheless, the region is still facing some obstacles to air traffic growth since large sections of airspace are under military control thus reducing the potential growth of commercial aviation. Nevertheless, MEA²⁹ was the 3rd biggest market in GDS, with a share of global air bookings made through GDSs of 10% in 2014: the region presented the highest increase in total capacity of 12.5%³⁰. Over the next years, domestic market growth will be remarked, stimulated by long-term economic expansion of 3.8% GDP growth per year. The projected outlook of annual air traffic growth for the region over the next 20 years is 6.2%³¹.

Africa has the fastest urbanization rate at 82%: despite the fact that has the lowest urban population (40%), its average has been increasing for the past 25 years – 3.5% annually – with growth estimation over the next 25 years of 3.1%. The population inflow that will be felt in major cities will lead to an increase in

²⁸ Source: IATA

²⁹ MEA – Middle East and Africa

³⁰ Source: ICAO

³¹ Source: Boeing - Current Market Outlook 2015-2034

spending on infrastructures, services etc. and will push productivity up along with disposable income, promoting economic expansion.

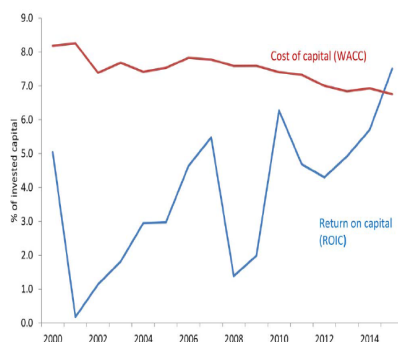
Besides, two thirds of Africa countries are currently considered by the World Bank middle income or higher income - Africa's economy has been growing at a rate of approximately 4.5% regardless of global economic crisis. Long run GDP growth is expected to remain stable at 5% with a yearly air traffic increase of 6%.

LATIN AMERICA

Last year, Latin America air travel grew by 5.9%. Latin America is the second largest urban population in the world real GDP growth over the next 20 years is projected to average 3.6%. One stimulates the other as together they increase the propensity to travel in the region.

The two largest economies in Latin America are Brazil and Mexico. Future expectations on traffic growth are supported by an agreement reached between US and Brazil, implemented in October 2015, where they agreed an open-skies aviation regime, which will liberalize US-Brazil air services for airlines consequently boosting Brazil's air travel growth³². Hence, the long-term air traffic for Latin America is expected to remain stable at 6%³³.

Figure 40: Airlines WACC&ROIC



Source: IATA, McKinsey

Financial Performance

If by on side GDS is one of the sectors in air travel that generates a higher gap between ROI and WACC (figure 32), airlines on average have been destroying value for its equity investors instead of creating it. The underperforming results have been one of the drivers of disintermediation: airlines start cutting costs by leaving GDSs. However, tendency shows that WACC have been declining over time with ROI increasing for the past 3 years. According to IATA airlines industry will present a larger ROI than WACC in 2015; not only because air travel perspectives for this year are very positive for airline profitability but also WACC is expected to lower in line with the drop of bond yields³⁴.

Online Travel Agencies

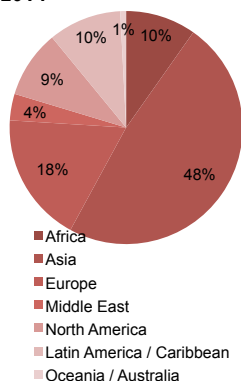
The world is technologically much more evolved compared to a 15 years ago, and that can be proven through the information provided in figure 42: nowadays, 46% of the world population is considered an Internet user and 48% of total internet users are Asians (figure 41). OTAs were probably the first companies to understand the potential of online channels for selling travel products and

³² Source: U.S. Department of Transportation

³³ Source: Boeing - Current Market Outlook 2015-2034

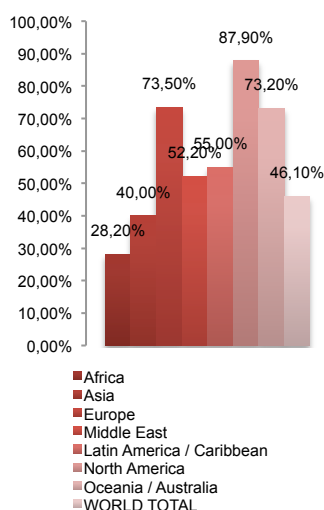
³⁴ Source: Economic Performance of the Airline Industry mid-year 2015 forecast - IATA

Figure 41: Internet Users in the World in 2014



Source: Internet World Statistics

Figure 42: Penetration in Internet (% of population) in 2014



Source: Internet World Statistics

services like airlines, car rental, cruise lines, hotels, railways and vacation packages on behalf of suppliers.

The enviable margins some OTAs presented in the beginning brought many players into the market, increasing the competition. In order to gain market share, OTAs many times provided too large discounts on bookings incurring losses and starting a price war, which can lead either to local and regional players dropping out or to consolidation of OTAs.

The U.S. online travel market is growing at the slowest pace compared to other economies such as Europe, Latin America and Asia-Pacific. Nevertheless it remains the biggest market in terms of online travel sales. Expedia (largest OTA in U.S), that is about to complete the acquisition of Orbitz (belongs to the top 4 OTAs in U.S.), will capture more than 75% of U.S. OTA gross bookings. The company will have only one direct competitor - Priceline³⁵. The U.S market shows signs of maturation in the OTA market. Consolidation of OTAs might be a risk to Amadeus regarding the decrease of its bargaining power towards OTAs: it might have to pay higher incentive fees.

Meanwhile, the European market is still highly fragmented but also maturing. Facing a completely different scenario, OTAs in Asia are experienced the fastest growth across the globe, presenting a massive increase in online gross bookings of 24% reaching US\$37.7 billion in 2014³⁶. PhoCusWright estimates that the share of online channels in travel bookings will be 43% by the end of 2015 increasing the number of bookings done through GDSs.

Financials

GDS

Revenues from GDS business are generated by segment booking fees. An air segment fee follows a value-based pricing model and there for it is defined depending on the value it brings to the airlines - flying outside the airlines region is more valuable than flying to a another country within region. Similarly, flying to foreign country is more valuable than flying than domestic flights. The key drivers that steer air bookings revenues are real GDP growth rate, airline traffic multiplier (assumes traffic grows at a multiplier of the GDP), rate of disintermediation, Amadeus GDS market share and booking fee.

To estimate the air traffic multiplier we run a regression between the world GDP growth rate and the air traffic growth with data from 1991. The coefficient obtained was 1.45 with a confidence interval at 95% of [1.22; 1.68]. According to

³⁵ Source: Can European OTAs Survive the Big Squeeze? - www.pata.org

³⁶ Phocuswright - Asia Pacific Online Travel Overview Eighth Edition: Online Travel Agencies (an Asia Pacific and Global Edition publication).

the data used, air traffic have been raising at a 1.45x the world GDP. The coefficient of determination is approximately 82.63% revealing the explanatory level of the world GDP growth regarding traffic growth. We assumed this year the air traffic multiplier is 1.46 (it has been rising for the past years) but then during the next 10 years we've forecasted an increase on traffic multiplier of 0.005 in each of the following years because within 20 years air traffic growth will be 1,58x the world GDP rate mainly driven by emerging markets that have not yet reached their potential³⁷. To adjust for the risk of further disintermediation we have deducted 0.5% in percentage of GDS in air travel each year (figure 43):

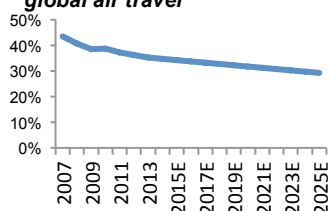
- Firstly, air travel has been growing at a higher pace than GDS market – the increasing growth of LCCs worldwide impacts the entire industry. They not only take market shares (mostly domestic) from airlines thereby affecting financial performance of the airlines; but also typically distribute a large proportion flight tickets through their direct channels. LCCs typically adopt an indirect channel distribution strategy only as they grow and become more mature, seeking to access higher yield customer segments.

- Secondly, despite the fact airlines would incur a huge loss if they leave GDS systems, the bookings growth in suppliers website has been raising. The increasing penetration on Internet has facilitated airlines selling through direct channels. Airlines allocate incentives to customers in the form of extra frequent-imposing a fee on tickets sold through 3rd party distributors – the latest announcement made by Lufthansa regarding GDS fees suggested it would start imposing a 16Eur charge on external reservations, penalising travellers and making their system less competitive.

Amadeus has been exhibiting market share gains at a stable pace through the years. Thus, it is expected the company to keep the same rhythm over the next 5 years showing market share increases of 0,5% yearly and then its kept at 45%. Considering the assumptions above referred, we got the forecasted Amadeus Air bookings for each year until 2025.

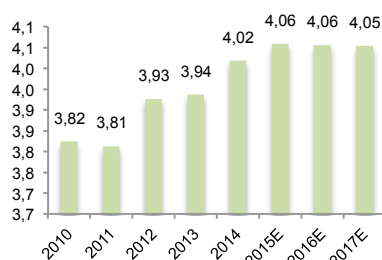
Average booking fee showed a healthy evolution over the years, except for 2009 due to the economic downturn (figure 44). The increase in average book fee is impacted by forex fluctuations and the increase of international travel (higher value bookings). During the next 5 years it was assumed a dilution of 1% annually due to new airlines agreements that will increase regional and local booking. From 2020, it was estimated the average booking fee remains stable at 4.05Eur. Hence, total Air bookings revenues were obtain by multiplying the estimated average booking fee per expected number of air bookings made through Amadeus GDS.

Figure 43: Global GDS as a % of global air travel



Source: Amadeus and NOVASBE research

Figure 44: Average Booking fee



Source: Amadeus and NOVASBE research

³⁷ Boeing - Current Market Outlook 2015-2034

Non-Air bookings revenues were forecasted assuming a constant growth of 1% over the years. This segment only counts of about 10% of total booking revenues and has been decreasing its share in revenues over the years. Although Amadeus is trying to expand GDS business into other markets, it is still premature to know how big the impact is going to be on total revenues because it takes time to get travel providers and travel agencies due to network effect in companies where non-air booking are their core business.

Other revenues of GDS refer to subscription fees paid by travel agencies for the use of Amadeus' GDS. These are expected to growth at a constant rate 0.8%, the average growth of the past five years.

The increasing threat of OTA consolidation might lead to a reduction of the GDS margins. OTAs are gaining bargaining power over GDS businesses and Amadeus might have to pay higher incentive fees. Hence, the operational costs were set to increase at the same rate bookings are growing, decreasing the contribution margin of GDS over the years.

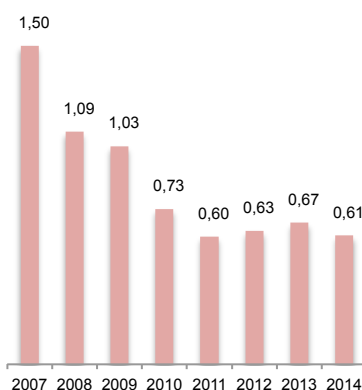
IT SOLUTIONS

IT solutions revenues are divided into airlines IT service, airports IT service, Hotels IT and Railway IT.

In Airlines IT revenues are divided into IT transactional, direct distribution and non-transactional. IT transactional revenue refers to Altéa suite and e-commerce. PBs organic growth was settled to rise at the same rate of air travel, based on increase diversification of the portfolio of airlines using Altéa and the ones expecting to migrate in a near future. The uplift in PBs due to additions of signed contracts to date was allocated to the expected migration year (as shown in figure 21). IT transactional fee is estimated to suffer a decline over the next two years and then remain flat due to cross selling of new modules: the decline in transactional fee is due the entrance of hybrids (like Southwest) in the Altéa community; whose are charged lower fees. Direct distribution relates to the single reservation solution and expects to growth at the same pace of air travel. Non-transactional revenue relates to implementation fees for new Altéa clients. We assume this segment will grow at 3% over the next 10 years keeping the historically pace.

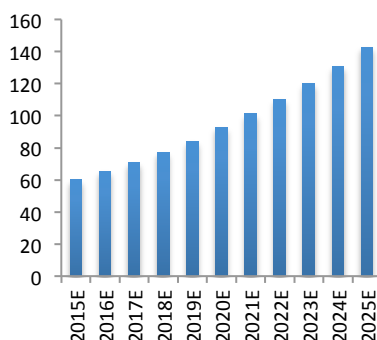
According to Airport IT Trends Survey by SITA, CAGR 2010-2014 of Airports IT spending was 16.71%. Operational systems market share is foreseen to be around 42% - it is cheaper for airports to outsource IT platform because it is very capital expensive. Considering all airports that do not develop in-house IT platform but instead buy this service, Amadeus is expected to hold 30% of this

Figure 45: Operational Cost/PB in Eur



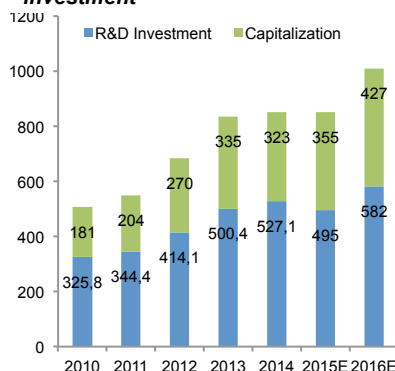
Source: Amadeus and NOVASBE research

Figure 46: Navitaire's EBITDA



Source: Amadeus and NOVASBE research

Figure 47: Capitalization and R&D investment



Source: Amadeus and NOVASBE research

market (single module and full service) by 2022³⁸: more than 600 airports have implemented Altéa Departure Control, one of the modules offered by Altéa, which facilitates Amadeus penetration on offering full platform IT. Thus, we assume an increase of 1% in the first 5 years due to recent acquisitions and then remain flat.

The Hotel IT revenues have been growing at a high rate with Newmarket. We assumed this growth is kept constant.

Operational costs were kept at 43% of revenues, decreasing 1% in each year due to economies of scale (figure 45) considering the upcoming agreements on both sectors. Capitalization is expected to be increasing at a constant rate of revenues.

Depreciation was computed by taking the average historical ratio of depreciations over fixed assets of the previous five years, a value we trust to be a reasonable forecast for upcoming years.

Navitaire

Amadeus estimated Navitaire would have \$198 million in revenue and \$60 million EBITDA in 2015, expecting an EBITDA margin of 30%. According to Amadeus, organic volumes growth rates in the airline industry tend to average mid-single digits, slightly higher in the low-cost carriers to hybrid segment and slightly lower in the full-service carrier segment. On a standalone basis and going forward, we are expecting Navitaire to continue to grow volumes, revenues and EBITDA sustainably at average annual growth rates ranging between mid to high single-digit rates - CAGR 2015E-2019E 5%-9%. Therefore we applied an average growth rate of the estimated CAGR of 7%. The level of ongoing capital expenditure in Navitaire is close to zero because they allocate almost everything into Operational expenditures.

CapEx and R&D Investment

Amadeus has unfailingly betted in R&D investment with the purpose to offer a better service and products that are flexible enough to adjust to different market conditions (figure 47). Amadeus is required to capitalise and then subsequently amortise part of R&D expenditure instead of incur R&D costs as expenses.

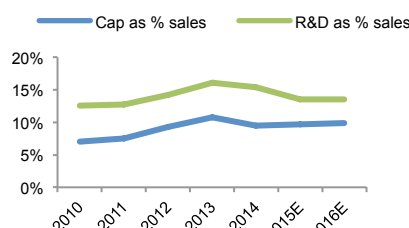
Concerning Amadeus strategy relying on the expansion to other businesses, namely IT activities in Airports and hotels, and constantly exploring new opportunities in region where it has a weaker presence to achieve growth, we assume guides for 12-15% of revenues in annual capex spending during the next 10 years (figure 48).

³⁸ Source: Amadeus ID 2013

Working Capital

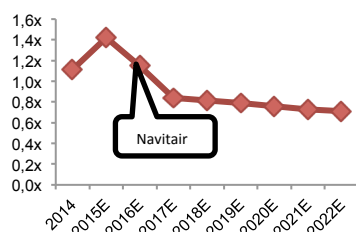
Amadeus typically works on negative working capital, generating cash inflows, driven by the fact that Amadeus collects payments from most airlines through IATA, ICH and ACH, with an average collection period of just over one month, contrasting with payments to providers and suppliers that are made on average over a longer period. Working capital is -28% of revenues, as historically predicted regarding the average of the last 5 years.

Figure 48: Capex and R&D



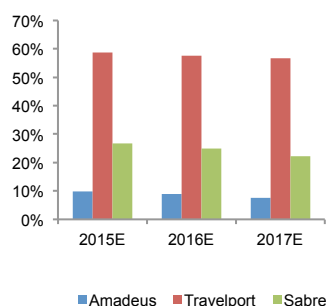
Source: Amadeus and NOVASBE research

Figure 51: Net Debt/EBITDA



Source: Amadeus and NOVASBE research

Figure 52: Net debt/EV peers



Source: Amadeus, Sabre, Travelport and Bloomberg

Debt Structure

Amadeus has very low levels of Financial Debt in its balance sheet when compared to its competitors. It is estimated the level of Net debt to enterprise value to remain constant through time. Until 2014, the company has been enjoying a deleveraging effect on its balance sheet. In 2014, the company had to cover for Newmarket, UFIS and i:FAO acquisitions. Plus it distributed €279.7 million in dividends and bought-back €320 million in shares. In 2015 it peaked due to Navitair acquisition at US\$830 million, which was 100% debt-financed.

By further leveraging up its position, Amadeus could enjoy higher fiscal benefit. However we do not expect Amadeus to acquire another company in a near future and the strong cash generation of the business led to a constant deleveraging as shown in the graph. We forecast a continuing trend of deleveraging within Amadeus' target capital structure of 1.0x-1.5x Net debt/EBITDA. We assume the be fuelled in part by an increased in pay-out ratio.

Valuation

The model used to estimate the fair value was the discounted cash flows model. This entitled a WACC of 6.91%.

The required rate of return from shareholders was achieved through the CAPM method. For the risk-free, we normalized the rate by using the last 10-years average yield of a 10 years German bund maturing obtaining a value of 2.664%. The reason is due to German bunds have been lower than its historical performance (0.562%) caused not only by the financial crisis but is also effect of the response of financial markets by implementation of QE, forcing investors to take (higher) credit risk to achieve higher returns. By using this rate we would be creating a biased towards really low rate levels, and so an average of historical performance seems to be a better proxy for what the risk free rate would be within 10 years.

To estimate the levered Beta, we regressed Amadeus excess returns against the MSCI World Index excess returns. Using weekly data we run regressions through

a moving average of 20 weeks. With a confidence interval at 95% confidence level between [0.13; 1.56] we reached an average beta of 0.84, used to estimate cost of equity. The market risk premium was assumed to be 5.5%, achieving a cost of equity of 7.3% (figure 51).

To weigh Amadeus' cost of debt we accessed its credit rating given by Moody's: the company is classified as a Baa2 and has been quite stable over time on its rating. The market implied CDS spread for Baa2 rating company is 0.66%. The default probability was taken as the average of the annual Baa2 rating of corporate default rates over the last 31 years, at 0.14%³⁹. To estimate the recovery rate we used an average of corporate debt recovery rates measured by post-default trading prices during 2014⁴⁰, 78.4%. Using the given information, the cost of debt is estimated to be 3.29% (figure 52). The tax rate used was 31%, reaching a WACC of 6.91%.

Figure 49: DCF assumptions summary

DCF assumptions summary	
Market Risk-free Rate (Rf)	2,7%
Equity Risk Premium (Rm-Rf)	5,5%
Beta	0,84
Cost of equity (Ke)	7,3%
Effective tax rate	31,0%
Cost of debt (Kd)	3,3%
Target D/E	8%
WACC	6,913%

Source: NOVASBE research

Figure 54: Cost of debt inputs

Cost of debt	3,29%
Risk free	2,66%
Default probability	0%
Recovery Rate	78,40%
CDS Spread	0,66%

Source: NOVASBE research

Figure 55: Future growth

Market Growth	Weights (2025)	
Europe	2%	50%
North America	3%	7%
Middle East	4%	6%
Latin America	3%	9%
Asia	4%	20%
Africa	5%	8%
g	2,80%	

Source: NOVASBE research

Terminal Value

In the long run, we foresee Amadeus' exposure to Europe will remain approximately the same since the market is more mature in this region. The economic growth is pretty much in line with long-term inflation estimated by ECB. Given its mature state in the long run, the North America market should weight 7%: GDS revenues are partly dependent from North America market growth (around 24%), but it still has a relatively low exposure when it come to IT services. We expect Navitaire acquisition to improve it but it is still a highly competitive market, reasoning why long term weight is expected to be approximately 13%.

Latin America, APAC and Middle East have been contributed a lot to Amadeus revenues increase not only due to healthy air traffic growth rates but also due to agreements made with Airlines within this regions that carried a significant share of total passengers carried within the regions. Hence we expected these 3 regions to weight roughly 43% in Amadeus long term performance.

By taking the weighted average of what we believe to be the long-term Amadeus' exposure and market growth of each region we reached a growth rate of 2.8% However, there are several issues that might affect the future growth of airline industry such as the "airspace saturation" or a demand stagnation over time. Hence, we estimated an weighted-average terminal growth, with the expected market growth of 2.8% weighting 30% of terminal growth and with the future

³⁹ Source: Moody's Annual Default Study: Corporate Default and Recovery Rates, 1920-2014

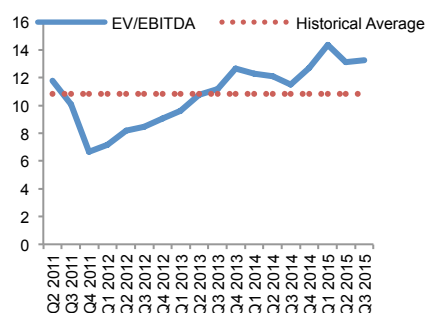
⁴⁰ Source: Moody's Annual Default Study: Corporate Default and Recovery Rates, 1920-2014

Figure 56: Financials in million of Eur

Cash Flow 2026	1 471,6
Revenues	6 738
Long term Ebita margin	44%
Ebitda	2 968
Noplat	1 615
Capex	809
Ch Working	38
g	2%
Terminal Value 16E	16 413

Source: NOVASBE research

Figure 57: Amadeus' EV/EBITDA



Source: Bloomberg

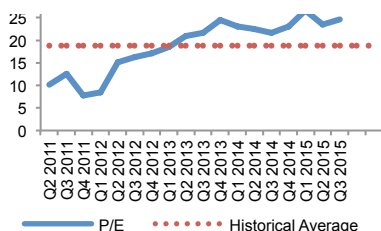
Multiples

Figure 58: Multiples comparison with Amadeus' global peers

Company	FX	Last Price	Market Cap	Price performance (%)			EV/EBITDA			EBITDA CAGR 15-17E	P/E			EPS CAGR 15-17E
				1M	3M	6M	2015E	2016E	2017E		2015E	2016E	2017E	
Amadeus	EUR	40,54	18 143	-1%	7%	1%	10,7x	9,8x	8,9x	7,8%	25,6x	22,4x	19,5x	14,60%
Travelport	USD	12,84	1 636	-8%	2%	-12%	3,1x	2,9x	2,7x	7,7%	13,6x	11,1x	9,3x	20,62%
Sabre	USD	27,96	8 157	0%	7%	15%	8,7x	7,4x	6,6x	14,4%	25,6x	20,0x	16,8x	23,44%
Median Global Peers							8,7x	7,4x	6,6x		25,6x	20,0x	16,8x	

Source: NOVASBE research

Figure 59: Amadeus' historical PER



Source: Bloomberg

global inflation of 1.8%⁴¹, that is assumed to remain constant over time, impacting 70% on terminal growth. Thus, we reached a value of 2,1%.

The company's NOPLAT was estimated considering a long term EBITDA margin of 44% (in line with previous 2 years) and is sustaining a 31% ROIC, in line with the upward trend of historical performance and with the forecast for the 10 years period analysis (appendix C): the analysed reinvestment rate was kept quite stable over time, assuming that after Navitaire acquisition the company will not make another large acquisition. However, the ROIC has been rising while RR showed some stability, meaning that might be a delay between the time the reinvestment is done and when these investments add value to NOPLAT, therefore originating an increasing ROIC (ROIC increased one third from 2010 to 2014). The capital expenditure was set to be 12% of revenues to cover demand increases (23% of CapEx) and depreciation costs (79% of CapEx). Working capital is -28.5% of revenues, as historically predicted. The perpetual cash flow should grow at 2.1% forever. The discounted cash flow value using a WACC of 6.91% returns a terminal value in December 2016 of €16,413.5 million. This represents 71% of Amadeus Enterprise Value as of December 2016.

According to the assumptions taken in this valuation, the fair value estimated is 46.69Eur (appendix D).

Market multiples enable a quick analysis of Amadeus valuation when compared with its global peers. Amadeus is currently trading at 25,68x P/E 15E and EV/EBITDA 15E of close to 10.7, above its historical multiples (EV/EBITDA of 11x and an average P/E of 18.8x) as shown in figures 55 and 57. Amadeus' outperforming results justify these high values when compared to its peers. The company trades at premium when compared to Travelport, but regarding Sabre, the company that presents the most similar business and financial performance compared to Amadeus, both companies seem to be trading at same level.

⁴¹ Source: Sources:PwC analysis, National statistical authorities, Datastream and IMF

Sensitivity Analysis

The scenario analysis is very important in the sense that the capital structure may vary in the future, changing the cost of capital, the credit rating of Amadeus can also suffer an alteration regarding future investments moves or acquisitions made by the company. Concerning the terminal growth, it is extremely hard to forecast at which rate the company is expected to grow in the future. The estimation got for this input is quite sensitive to air traffic growth. Which is linked to GDP growth, population growth, etc. However we cannot say the air traffic will grow forever because that in the very long-run would bring traffic issues between airlines due to the failed attempt to satisfy the high demand: the air traffic would not most likely have “enough room” for all airlines at the same time, reducing the probability to satisfy all air travel demand. A situation like this would obviously get the intervention of regulatory entities. Furthermore within a world where the sky cannot accept anymore planes, according to the supply and demand curve tickets would get very expensive and the world population would increase the railway transportation.

As we can see for the sensitivity analysis, a 1.6% change in WACC combined with a 0.4% change in terminal growth can lead to a gap of approximately 15Eur on share price. Within a really small interval of variation on these inputs (<0.5%), our recommendation could easily change from a buy recommendation, to a sell recommendation, with negative total expected return (31.39Eur).

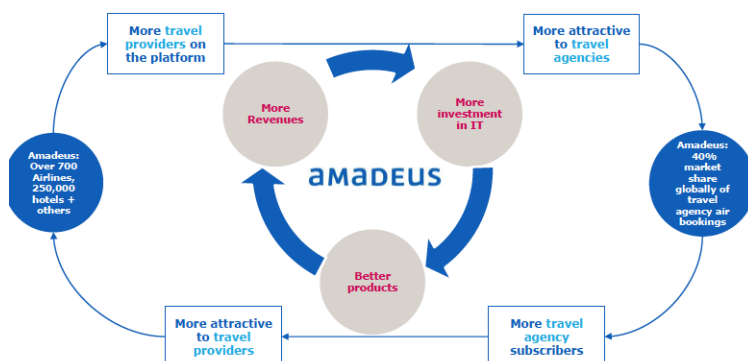
Figure 60: Sensitivity Analysis

		WACC				
		5,5%	6,5%	6,9%	8,5%	9,5%
g	1,0%	56,29	44,26	40,49	29,89	25,27
	1,5%	61,94	47,65	43,30	31,39	26,33
	2,1%	70,89	52,74	46,69	33,50	27,81
	2,5%	78,86	56,98	50,84	35,15	28,93
	3,0%	92,40	63,64	56,06	37,54	30,53

Source: NOVASBE research

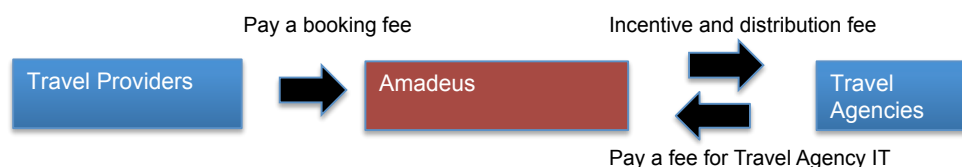
Appendix

Appendix A – Network Effect

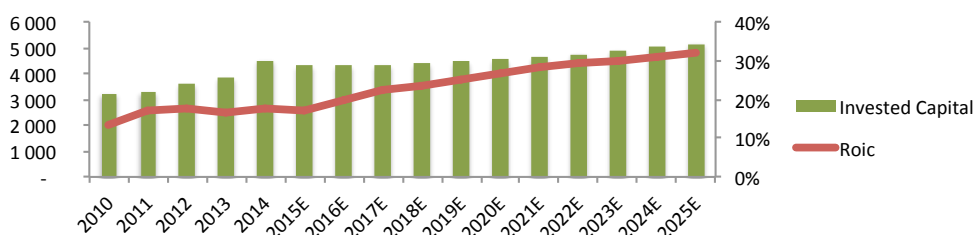


Source: Amadeus

Appendix B – Transaction model for Distribution



Appendix C – ROIC & Invested Capital forecast



Appendix D – DCF Model

Eur millions	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
EBITDA	1 514	1 647	1 793	1 888	2 017	2 166	2 316	2 444	2 585	2 739	2 910	2 968
D&A	(385)	(397)	(412)	(429)	(448)	(469)	(493)	(518)	(544)	(572)	(602)	(629)
EBIT	1 130	1 250	1 381	1 459	1 569	1 697	1 823	1 926	2 041	2 167	2 308	2 339
Notional Income Taxes	(339)	(375)	(414)	(438)	(471)	(509)	(547)	(578)	(612)	(650)	(692)	(725)
NOPLAT (or NOPAT)	791	875	967	1 021	1 098	1 188	1 276	1 349	1 429	1 517	1 615	1 614
Depreciation	385	397	412	429	448	469	493	518	544	572	602	629
Gross Free Cash Flow	1 176	1 272	1 379	1 450	1 546	1 657	1 769	1 866	1 972	2 089	2 217	2 243
Net Capex	632	490	532	557	592	633	675	709	746	788	834	809
Changes in NWC	476	72	84	61	78	87	82	73	78	84	90	38
FCF	1 019	854	931	955	1 032	1 111	1 177	1 230	1 304	1 385	1 474	1 472
Sum of Discounted CashFlows		7 503										
Terminal Value		16 416										
Net Operating Assets		(959)										
EV 2016		22 960										
Net Debt (2016E)		2 066										
Equity Value		20 894										
# Shares (millions)		447,582										
Traget Price (€)		46,68										

Appendix E – Balance Sheet

€ million

Balance Sheet	2014	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Tangible Fixed Assets	359	430	430	429	427	424	420	415	409	402	394	385
Intangible Fixed Assets	2 353	2530	2613	2729	2861	3010	3179	3367	3565	3776	4000	4241
Goodwill	2 379	2379	2379	2379	2379	2379	2379	2379	2379	2379	2379	2379
Non current financial assets	50	50	50	50	50	50	50	50	50	50	50	50
Others	101	104	108	113	118	123	129	135	142	148	156	164
Non Current Assets	5 242	5493	5580	5700	5834	5986	6157	6346	6545	6755	6979	7219
Cash and Equivalents	373	392	393	395	396	397	399	400	402	403	404	406
Other	184	186	199	215	228	242	257	272	285	299	314	330
Other Financial assets	23	23	23	23	23	23	23	23	23	23	23	23
Debtors	344	334	358	388	410	435	463	490	513	538	565	594
Current Assets	924	934	973	1 021	1 057	1 097	1 142	1 185	1 223	1 263	1 307	1 353
Total assets	6 165	6427	6553	6721	6891	7083	7299	7531	7768	8018	8286	8572
Long term debt	1 529	2 150	1979	1567	1587	1604	1616	1623	1626	1624	1615	1597
Provisions	27	27	27	27	27	27	27	27	27	27	27	27
Non current financial liabilities	662	662	662	662	662	662	662	662	662	662	662	662
Other	417	742	796	862	912	968	1030	1089	1141	1197	1256	1321
Non-current liabilities	2 635	3582	3465	3118	3188	3261	3335	3401	3456	3510	3560	3607
Short Term Debt	295	321	349	380	413	450	489	532	579	630	686	746
Creditors	593	649	696	754	798	847	901	953	998	1047	1099	1156
Provisions	15	15	15	15	15	15	15	15	15	15	15	15
Current financial liabilities	451	451	451	451	451	451	451	451	451	451	451	451
Other	86	171	184	201	213	227	243	257	270	284	299	315
Current liabilities	1 663	1607	1695	1800	1890	1989	2099	2208	2314	2427	2550	2683
Liabilities related to assets held for sale	223	0	0	0	0	0	0	0	0	0	0	0
Total liabilities	4 298	5189	5160	4918	5078	5250	5434	5609	5770	5937	6110	6290
Share capital	4	4	4	4	4	4	4	4	4	4	4	4
Additional paid-in capital (share premium)	918	918	918	918	918	918	918	918	918	918	918	918
Reserves	911	911	911	911	911	911	911	911	911	911	911	911
Treasury shares	(349)	(349)	(349)	(349)	(349)	(349)	(349)	(349)	(349)	(349)	(349)	(349)
Retained earnings	(243)	75	428	832	1296	1793	2329	2792	3291	3819	4379	4973
Profit for the year attributable to owners of the pa	631	706	808	928	994	1071	1160	1247	1319	1399	1487	1585
Less interim dividends		(353)	(404)	(464)	(497)	(535)	(696)	(748)	(792)	(839)	(892)	(951)
Raise/buyback equity		(677)	(927)	(981)	(1 468)	(1 983)	(2 414)	(2 857)	(3 309)	(3 785)	(4 286)	(4 813)
Total capital and reserves	1 873	1 235	1 390	1 800	1 810	1 830	1 863	1 919	1 995	2 078	2 172	2 279
Equity attributable to owners of the parent	1 842	1 235	1 390	1 800	1 810	1 830	1 863	1 919	1 995	2 078	2 172	2 279
Non-controlling interest	25	3	3	3	3	3	3	3	3	3	3	3
Total Equity	1 867	1 238	1 393	1 803	1 813	1 833	1 866	1 922	1 998	2 081	2 175	2 282
Total Liabilities and Equity	6 165	6 427	6 553	6 721	6 891	7 083	7 299	7 531	7 768	8 018	8 286	8 572
Check	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

Appendix F –Cash Flow Map and P&L

€ millions	2013	2014	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
EBITDA	1 189	1 306	1 473	1 611	1 775	1 888	2 017	2 166	2 316	2 444	2 585	2 739	2 910
D&A	(301)	(350)	(385)	(396)	(411)	(427)	(446)	(468)	(492)	(517)	(543)	(571)	(601)
EBIT	888	956	1 088	1 216	1 364	1 460	1 570	1 698	1 824	1 927	2 042	2 168	2 308
Notional Income Taxes	(266)	(287)	(326)	(365)	(409)	(438)	(471)	(509)	(547)	(578)	(613)	(650)	(692)
NOPLAT (or NOPAT)	603	670	761	851	955	1 022	1 099	1 189	1 277	1 349	1 429	1 518	1 616
Depreciation	301	350	385	396	411	427	446	468	492	517	543	571	601
Gross Free Cash Flow	903	1 020	1 146	1 247	1 366	1 450	1 546	1 656	1 768	1 866	1 972	2 089	2 217
Net Capex	414	1 085	632	478	526	557	592	633	675	709	746	788	834
Change in Net Working Capital	(123)	68	456	75	92	70	78	87	82	73	78	84	90
Operating Free Cash Flow	367	4	970	843	932	963	1 031	1 110	1 176	1 230	1 304	1 385	1 474
Financial Income	6	10	3	3	3	3	3	3	3	3	3	3	3
Tax	(2)	(3)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Gross Non Operating Cash Flow	4	7	2	2	2	2	2	2	2	2	2	2	2
Total Non Op Liabilities	978	1 364	1 140	1 140	1 140	1 140	1 140	1 140	1 140	1 140	1 140	1 140	1 140
Ch Total non Op Liabilities	232	385	(223)	0	0	0	0	0	0	0	0	0	0
Total non Op Assets	183	173	177	181	186	190	196	202	208	214	221	229	237
Ch Total non Op Assets	18	(10)	4	4	5	5	5	6	6	7	7	7	8
Non-Operating Free Cash Flow	218	402	(225)	(2)	(3)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(6)
Interests	(70)	(68)	(86)	(70)	(49)	(50)	(51)	(53)	(54)	(55)	(56)	(58)	(59)
Tax Shields	21	20	26	21	15	15	15	16	16	17	17	17	18
Net Financial Debt	1 207	1 451	2 098	1 955	1 573	1 627	1 681	1 732	1 782	1 833	1 881	1 927	1 970
Change in Financial Debt	(287)	243	648	(143)	(382)	54	53	51	50	50	49	46	43
Net Change in Equity (in Cash)	(249)	(602)	(1 332)	(650)	(513)	(979)	(1 045)	(1 121)	(1 185)	(1 237)	(1 308)	(1 386)	(1 470)
Total Cash Flows From Investors	585	406	745	841	929	960	1 028	1 107	1 172	1 225	1 299	1 380	1 468
Total FCF Available to Investors	- 586	- 406	- 745	- 841	- 929	- 960	- 1 028	- 1 107	- 1 172	- 1 225	- 1 299	- 1 380	- 1 468

Millions in Eur	2013	2014	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Revenue	3 104	3 418	3 711	3 980	4 309	4 559	4 838	5 150	5 444	5 704	5 983	6 282	6 605
EBITDA	1 188,6	1 306,0	1 473	1 611	1 775	1 888	2 017	2 166	2 316	2 444	2 585	2 739	2 910
D&A	(301)	(350)	(385)	(396)	(411)	(427)	(446)	(468)	(492)	(517)	(543)	(571)	(601)
EBIT	887,9	955,6	1 087,8	1 215,8	1 364,5	1 460,3	1 570,3	1 697,9	1 823,9	1 927,5	2 041,7	2 168,2	2 308,3
Net financials	(71)	(56)	(84)	(67)	(46)	(47)	(48)	(50)	(51)	(52)	(53)	(55)	(56)
Others	7	(1)	0	0	0	0	0	0	0	0	0	0	0
EBT	823,9	898,0	1 004,2	1 148,9	1 318,8	1 413,3	1 522,0	1 648,3	1 773,0	1 875,3	1 988,3	2 113,6	2 252,7
Taxes	(266,0)	(268,7)	(301,3)	(344,7)	(395,6)	(424,0)	(456,6)	(494,5)	(531,9)	(562,6)	(596,5)	(634,1)	(675,8)
Net income	557,9	629,4	703,0	804,3	923,2	989,3	1 065,4	1 153,8	1 241,1	1 312,7	1 391,8	1 479,5	1 576,9
Share in profit / (losses) from associates and JVs	5,1	2,8	3,5	4,0	4,6	4,9	5,3	5,8	6,2	6,6	7,0	7,4	7,9
Profit for the period from continuing operations	563,0	632,1	706	808	928	994	1 071	1 160	1 247	1 319	1 399	1 487	1 585
Profit for the period from discontinued operations	0,0	0,0	0,0	0	0	0	0	0	0	0	0	0	0
Profit for the period	563,0	632,1	706	808	928	994	1 071	1 160	1 247	1 319	1 399	1 487	1 585

Disclosures and Disclaimer

Research Recommendations

Buy	Expected total return (including dividends) of more than 15% over a 12-month period.
Hold	Expected total return (including dividends) between 0% and 15% over a 12-month period.
Sell	Expected negative total return (including dividends) over a 12-month period.

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