CarteretAnalytics

The Sun Sport feature: Jadon Sancho - what might be his performance impact (*Intrinsic Value*) at Manchester United, Chelsea, Liverpool, Real Madrid or Barcelona?

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1.   The headlines

- **Sancho** is, objectively, performing very well so far this season but his *Intrinsic Value* for Borussia Dortmund is only half (**£49.46m**) of the estimated/speculated market value of the player (**£108m/£120m**). This suggests that Borussia Dortmund should 'cash-in' now.
- Even if **Sancho** remained at the club until his peak performance years (26-28 years old) his *Intrinsic Value* would only rise to **£82.43m** based on current performance levels, and there is significant risk within the intervening period of injury or fall-off in performance that could dramatically reduce his market value (and *Intrinsic Value*).
- **Sancho** represents better performance *Intrinsic Value* for Manchester United (**£65.79m**), Chelsea (**£63.05m**) and Real Madrid (**£67.06m**) than players that are currently at those clubs in his position (Lingard (**£33.54m**), Pulisic (**£42.27m**) and Bale (**£37.65m**)).
- However, if these clubs have to pay **c.£110m** to acquire **Sancho**, they might not get a net-positive return on that level of investment. Instead, the quantitative analysis suggests they would be better spending **c.£60m** on **Jack Grealish**. By doing so, and assuming they offer a 3 year or 4 year contract, they are effectively buying **£82.42m rising to £91.58m** (Manchester United), **£78.99m rising to £87.77m** (Chelsea) or **£84.01m rising to £93.35m** (Real Madrid) performance value from **Grealish**, for only **c.£60m**. That looks like excellent business.
- At Barcelona, **Messi's** objective performances are still better than those that the data suggests **Sancho** could achieve at Barcelona; but **Sancho** has the potential to improve his performances over the next 7 years until he reaches the projected peak performance years (age 26-28 years old), while at 32 years old **Messi's** performances are projected to drop-off dramatically over the next 2-3 years. Accordingly, **Sancho** would have a higher *Intrinsic Value* right now at Barcelona (**£67.94m**) than **Messi** (**£53.64m**).
- Assuming that Liverpool hold-on to **Mo Salah**, it would not make any real sense to spend **c.£110m** on **Sancho** to acquire a **£66.37m** *Intrinsic Value* from **Sancho** at Liverpool; when **Salah** is currently providing an *Intrinsic Value* of **£92.73m**. Likewise, it would not appear to make much sense for **Sancho** to compete for a place with **Salah** at Liverpool and, thereby, get reduced gametime. This is reportedly the main reason he left Manchester City.

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- **Mbappe** is, in theory, an interesting alternative option to **Sancho** for each of the clubs listed in this Research Paper. However, the quantitative analysis shows that he is incredibly overpriced in the market. His current *Intrinsic Value* at PSG is **£54.62m**, compared to market values ranging from **£180m-£250m**. If PSG can achieve a market price anywhere near this range, then they should sell. But which clubs will actually pay that level of transfer fee, especially if they are able to understand his *Intrinsic Value*?
- Overall conclusion: **Jack Grealish** would appear to offer the highest *Intrinsic Values*, and at the best (and much lower) estimated market value.

2.   A little bit of science…

At Carteret Analytics we have developed the quantitative analysis utilised to good effect in investment banking for trading strategy, portfolio optimisation, derivatives pricing and hedging, and risk management by our sister corporate finance firm, Carteret Capital - and applied it to football.

In particular, our work provides an objective measure of how good a football player really is - removing all the subjective noise and opinions.

An integral part of the analysis is to calculate a ***Carteret Rating***[3] for every football player, which rates and values a player's contribution to his team winning football matches. It is incredibly accurate at predicting a player's capabilities. Indeed, we always start with the premise that a professional football club's primary objective is to win matches - and therefore the more a player contributes to his team winning matches, the better the player.

Carteret Analytics has also extended the *Carteret Rating* to give each player an ***Intrinsic Value*** (in monetary terms). This is essentially the value of the player 'in use' - the monetary value of his contribution to his club winning football matches. It is a sophisticated financial calculation - utilising proprietary algorithms - and which can be applied to and by other clubs. This enables, for example, a prospective buying club to virtually (yet objectively) 'transplant' a player into its own team to determine his potential *Intrinsic Value* for the buying club. Once the prospective buying club has this information, it can help inform them of the appropriate transfer fee to offer to the player's current club.

3.   Side Note: The distinction between *Carteret Rating* and *Intrinsic Value*

Carteret Rating
This is a completely objective measure. It only takes account of a player's performance metrics, and analyses these metrics utilising a proprietary algorithm to determine how good a player really is - and predict how he will perform in the future.

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[3] *Carteret Rating*: this is a proprietary method of determining how good a player really is. It is a significant and leading-edge algorithm. We assess a player by identifying every match in which he has been involved (for which we have data) and identifying the key events in each and every one of those matches. These Key Match Events ("KMEs") are events that led to a goal being scored; could have led to a goal being scored; led to a goal being conceded; or could have led to a goal being conceded. Then, for each and every KME, in each and every single match, we analyse that player's contribution to each of those KMEs. This is a substantial piece of analysis, and one which produces a unique *Carteret Rating* for the player. It is a dynamic rating, and it changes with each additional match played.

It ignores characteristics such as age and nationality, and avoids the 'noise' of subjective considerations that are often taken into account (often wrongly) in trying to determine the quality of a player.

It is an exceptionally accurate rating, with an *r-squared value* of **0.89** for Premier League players - demonstrating that it is very precise at predicting how good a player will be in the future. It is also a dynamic measure, allowing us to accurately predict the impact of the player in different clubs and different leagues.

Intrinsic Value

This is a proprietary monetary measure of the player's objective performance. In other words, it monetises a player's *Carteret Rating*.

It is incredibly useful to a club because it allows them to compare a player's intrinsic value to his market value. For instance, if a player's *Intrinsic Value* is £10m and a club is offering £20m to buy him, then this would strongly suggest that his current club should sell him.

Of course, if you are the buying club then you will also benefit enormously from an insight into what that player's *Intrinsic Value* might be if he were to join the buying club. If his *Intrinsic Value* for the buying club is £25m, then it suggests that a purchase price of £20m also offers good value for the buying club.

This also illustrates that a player's *Intrinsic Value* can vary between clubs. It is obvious that this should be the case because the context for valuing that player will be different at each club - the quality and performance levels of the other players at the other club, the quality and performance of the coaching staff, the 'best fit' analysis of that player into preferred and optimal formations at the other club, the league and league position of the other club, the player's projected value as an intangible asset as part of the enterprise/corporate value of the other club, the cost/benefit analysis (including opportunity cost) of the other club with and without that player etc.

It is important to note that it is unlikely that both clubs - the selling and buying club - will have access to the *Carteret Rating* or *Intrinsic Value*. This provides a substantial competitive advantage to the club that does have access to these measures, because it will help that club successfully negotiate the best possible price for the player whilst ensuring (in the case of the selling club) that the player is not sold for a price lower than his *Intrinsic Value* to the selling club; or (in the case of the buying club) that the player is bought for a price lower than his *Intrinsic Value* to the buying club.

4.   The *Intrinsic Values* for Sancho; how he compares to other players; and does he represent good value?

The table below provides *Intrinsic Values* for **Jadon Sancho** at his current club, Borussia Dortmund, and at Manchester United, Chelsea, Liverpool, Real Madrid and Barcelona. It also provides a useful means of comparison against **Sancho's** estimated and speculated market value; against the *Intrinsic Values* of the players that he might potentially 'replace' at each of those clubs; and considers whether those clubs might find better value in signing, for example, **Mbappe** or **Grealish**.

Club	Sancho *Intrinsic Value* £	Sancho Est. Market Value (Transfer-markt) £	Sancho Media Speculation Value £	Lingard *Intrinsic Value* £	Pulisic *Intrinsic Value* £	Salah *Intrinsic Value* £	Bale *Intrinsic Value* £	Messi *Intrinsic Value* £	Mbappe *Intrinsic Value* £	Grealish *Intrinsic Value* £
Borussia Dortmund	49.46m	108.0m	120.0m							
Manchester United	65.79m			33.54m					58.68m	82.42m
Chelsea	63.05m				42.27m				56.24m	78.99m
Liverpool	66.37m					92.73m			59.2m	83.15m
Real Madrid	67.06m						37.65m		59.82m	84.01m
Barcelona	67.94m							53.64m	60.23m	84.36m

This table requires some explanation:

- The *Intrinsic Value* is dependent, to a certain extent, on a player's age. **Sancho** is currently 19 years old, which means that he has not yet reached his full performance potential - which tends to be between 26-28 years old for a player in his position. This means that his *Intrinsic Value* is lower than if he was in the 26-28 years old range (when he will have had time to prove his potential), but higher than if, for example, he was in the 32-35 years old range - when performances tend to be on the wane and, importantly, a player holds less monetary value for the club (because his career is now very limited).
- A good example of this is the *Intrinsic Value* for **Messi** at Barcelona. **Messi** has an *Intrinsic Value* of **£53.64m**, compared to **£67.94m** for **Sancho** (if **Sancho** played at Barcelona this current season). At first glance this might indicate that **Sancho** would be a better player than **Messi** at Barcelona this season, but the *Intrinsic Value* is not a measure of pure performance. *Carteret Rating* is the pure quantitative/objective measure of how good a player

really is; whereas the *Intrinsic Value* takes account of financial considerations such as player age (see above) and possible length of, and return on, a player contract. By way of interest, **Sancho's** *Carteret Rating* this season so far is **447.2**, compared to **476.9** for **Messi**.

- We have chosen players that at each of Manchester United, Chelsea, Liverpool, Real Madrid and Barcelona are currently playing in the same position for those clubs in which Sancho is likely to play. This highlights that **Sancho** would be more valuable than each of **Lingard** (**£65.79m vs £33.54m**), **Pulisic** (**£63.05m vs £42.27m**), **Bale** (**£67.06m vs £37.65m**), and **Messi** (**£67.94m vs £53.64m**) - but less valuable to Liverpool than Salah (**£66.37m vs £92.73m**).

- We also thought it would be useful to compare **Sancho** to **Mbappe** (21 years old) and **Grealish** (24 years old), and hypothetically consider what their *Intrinsic Values* might be (as an alternative to **Sancho**) if they played for each of the clubs under consideration. **Sancho** is more valuable than **Mbappe** across the board, but the comparison with **Grealish** is very interesting. It has not been widely mooted that **Grealish** is under consideration for Real Madrid and Barcelona as much as he might be for Manchester United, Chelsea and Liverpool - although Duncan Wright did report interest from both these clubs in an article in The Sun on 6 February 2020. In any event, **Grealish's** *Intrinsic Value* is significantly higher than **Sancho** across all the clubs, and this would be really interesting information for Manchester United, Chelsea and Liverpool in particular.

- Given the *Intrinsic Values* for **Sancho**, it is a pertinent consideration whether paying **£108m** (*Transfermarkt* estimated market value) or **£120m** (media speculated value) for **Sancho** actually represents good value for the buying clubs? It will depend on the length of the contract for **Sancho** - for instance, if Manchester United offered **Sancho** a 5 year contract, then our data analysis tells us that his potential *Intrinsic Value* at Year 5 (based on current values) is likely to reach **£98.69m**. This is still below **£108m/£120m**.

- By comparison, a 3 or 4 year contract at Manchester United for **Jack Grealish** would see his *Intrinsic Value* rise from **£82.42m** to **£91.58m** at Year 3 or 4. If Manchester United could acquire **Grealish** for **£60m** (as has often been speculated in the media), then this represents excellent value for Manchester United across the whole period of his contract.

- For **Mbappe**, Transfermarkt attributes an estimated market value of **£180m** to him and there are some incredibly high possible transfer fees mentioned in the media (including **£250m**). Any transfer fee at these levels would look incredibly poor value in comparison to **Sancho**, and, particularly, in comparison to **Grealish**. **Mbappe** also has the lowest *Intrinsic Values* across all the clubs, and by a significant margin.

About Carteret Analytics

Carteret Analytics is part of the Carteret Group of companies, based in the City of London, New York and Geneva. It provides leading-edge quantitative analysis and commercial analytics to clients worldwide, with particular expertise in the sports sector. In football our work includes player rating and valuation, head coach assessment, team performance analysis, and applying proprietary analytics to transform commercial revenues.