



## An analysis of the player transfer activity of each German Bundesliga club in the Summer 2020 Transfer Window to determine, based on quantitative measures, which club has been most successful

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### 1. So, how active have the Bundesliga clubs been?

Following on from what was an interesting Bundesliga 2019/20 campaign, the Summer Transfer Window is a time where clubs make their preparations for the forthcoming season and fans hope that their team will be active bringing in new talent.

The window started off early with the big transfer (that had been a long time coming) being **Leroy Sane** finally leaving Manchester City to play in Munich.

Both of the newly promoted teams have decided against spending big with neither VfB Stuttgart or Arminia Bielefeld spending more than **€3.6m** on a single signing. It will be interesting to see whether either club will face repercussions for refusing to capitalise on their attractive position of entering the top German football division. Bayern Munich, Hertha BSC and RB Leipzig have all been active as well with each club signing or selling at least three new players over the **€5m** mark.

### 2. The research headlines

- The player signing of the Summer Transfer Window was **RB Leipzig's** signing of **Hee-chan Hwang**, paying **€9m** for a player whose objective performance levels show his value should be in excess of **€34m**.
- The best player sale made in this Summer Transfer Window was that of **Kai Havertz** to **Chelsea**. His objective performance levels value the player at **€30.4m** but **Chelsea** paid a massive fee of **€80m**, a value delta of **€49m (62%)**. This was a highly profitable transaction for **Bayer Leverkusen** and considered to be a very intelligent piece of business.
- The sale of **Thiago** for only **€22m** to **Liverpool** from **Bayern Munich** was not a profitable deal for the selling club. The player's objective performance shows he has an *Intrinsic Value* in excess of **€36m**.

### 3. 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.

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**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<sup>4</sup>** 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.

#### **4. Who bought players for more than their Intrinsic Value?**

There have been notable transfers completed by clubs which are at a price that is more than **10%** over their *Intrinsic Value* to the buying club. This is what we have classed as a notable overpayment for the predicted performance that the player will bring to the team.

The *Intrinsic Value* of **Leroy Sane** to Bayern Munich is **€35.35m**. The *Intrinsic Value* essentially represents a break-even position for Bayern Munich. This is the contribution they can expect **Sane** to make to the Bayern Munich team. This means that as Bayern Munich paid **€45m** for **Sane's** services, they have overpaid by **€9.65m**. Bayern Munich may argue that as he is only 24 years old, he has time to mature and come into his prime to prove that they have not overpaid for his services.

There is a similar situation with **Jude Bellingham's** arrival at Borussia Dortmund and **Patrik Schick's** arrival at Bayer Leverkusen. All three transfers have been shown to be questionable pricing decisions based upon the *Intrinsic Values* each player holds for their new clubs.

#### **5. Who sold players for less than their Intrinsic Value?**

In the same fashion as the clubs who overpaid for players, the science is the same for the clubs who have sold their players at an undervalue of more than 10% less than their *Intrinsic Value*.

The player that was sold for the largest amount lower than their *Intrinsic Value* to their previous club, was **Thiago** from Bayern Munich to Liverpool. The *Intrinsic Value* he held for Bayern Munich was **€36.18m** meaning that Bayern Munich sold **Thiago** at an undervalue of just over **€14m** when they allowed him to depart to join Liverpool for **€22m**. As **Thiago** is already 29, he is at what is considered to be the prime age of a football player's career (usually between 27-29 years old). This suggests that Bayern Munich should have negotiated to increase the transfer fee from Liverpool to better reflect the loss of a player who's contribution to Bayern Munich winning football matches is so much higher than the transfer value.

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<sup>4</sup> *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 is fair to assume however, that the low transfer fee was as a result of **Thiago** entering the final year of his contract. Thus, the Club would rather receive a fee for the player than allow him to leave for free at the conclusion of the 2020/21 season.

**Felix Uduokhai's** transfer from VfL Wolfsburg to FC Augsburg and **Ondrej Duda's** transfer from Hertha BSC to FC Köln are both transfers that have been completed for values lower than their *Intrinsic Value*. They are in similar situations as they are both still young at 22 and 25 respectively and have been sold at values **£13.8m** and **£11.4m** less than their *Intrinsic Values* to their previous clubs.

## 6. Intelligent business

RB Leipzig obtaining the services of **Hee-chan Hwang** in the Summer Transfer Window is the steal of the summer. The transfer value for his move from RB Salzburg to RB Leipzig cost only **€9m**. His *Intrinsic Value* is currently **€34.6m**. RB Leipzig have secured a player with international experience for almost **300%** of his monetary value for contribution to RB Salzburg winning football matches in the 2019/20 season.

Another excellent piece of transfer business for RB Leipzig was the purchase of Centre Forward **Alexander Sörloth** from English Premier League team Crystal Palace. **Sörloth** was bought for a fee of **€20m** but his *Intrinsic Value* to RB Leipzig is **€42.7m**. In the 2019/20 season **Sörloth** was on loan to Trabzonspor in the Turkish Super Lig. He scored 24 goals in 34 matches for Trabzonspor becoming the clubs top scoring foreign player in a single season.

**Kai Havertz** being sold to Chelsea by Bayer Leverkusen was the best sale of the Transfer Window in terms of value to the selling club. **Havertz** had an *Intrinsic Value* of **€30.4m** to Leverkusen but was sold for a massive **€80m**. The *Intrinsic Value* demonstrates in monetary terms, **Havertz** contribution to Leverkusen winning football matches in the 2019/20 season. With such a high transfer value when comparing it to his *Intrinsic Value*, it shows Bayer Leverkusen have made a great profit on the deal and now have the funds to find an even better player or players.

Another notable player sale which we have identified as good business was the sale of Centre Forward **Luca Waldschmidt** by Freiburg to Benfica for **€15m**. **Waldschmidt** had an *Intrinsic Value* to Freiburg of **€9.6m**, which means a profit of **€5.4m** and an upside on the deal for Freiburg of over **36%**. His lower *Intrinsic Value* demonstrates his contribution to his team winning football matches is not as valuable as the market considers it to be.

## 7. Intrinsic Value - the data analysis of 'The good, the bad and the... average'

The tables below highlight whether a team has had a good or bad Summer Transfer Window by showing the *Intrinsic Value* each player holds for the club that they are either arriving to or departing from within the Bundesliga in contrast with their actual transfer value.

'Good Value' is defined as completing transfers where the Club has either:

- purchased players for  $\geq 10\%$  less than their *Intrinsic Value*; or
- sold players for  $\geq 10\%$  more than their *Intrinsic Value*.

'Average Value' is defined as having either:

- purchasing/selling players for values within 10% of their *Intrinsic Value*.

'Bad Value' is defined as completing transfers where the Club has either:

- purchased players for  $\leq 10\%$  more than their *Intrinsic Value*; or
- sold players for  $\leq 10\%$  less than their *Intrinsic Value*

### Good Value Transfers

Good Value Bundesliga Transfers - Summer 2020/21					
Team	Arrivals	Departures	Intrinsic Value	Transfer Fee	Intrinsic Value Delta
FC Köln	Sebastian Andersson Ondrej Duda	Jhon Córdoba	€11,888,250	€6,500,000	€5,388,250
			€10,116,700	€7,000,000	€3,116,700
			€13,648,800	€15,000,000	€1,351,200
Freiburg	Baptiste Santamaria	Luca Waldschmidt Robin Koch Alexander Schwolow	€9,583,750	€15,000,000	€5,416,250
			€12,818,850	€13,000,000	€181,150
			€13,170,300	€7,000,000	-€6,170,300
			€11,603,350	€10,000,000	€1,603,350
Eintracht Frankfurt	André Silva		€20,850,500	€9,000,000	€11,850,500
Hertha BSC	Alexander Schwolow Omar Alderete Jhon Córdoba	Ondrej Duda	€25,542,660	€7,000,000	€18,542,660
			€19,167,500	€6,500,000	€12,667,500
			€24,851,200	€15,000,000	€9,851,200
			€18,428,850	€7,000,000	-€11,428,850
RB Leipzig	Hee-chan Hwang Alexander Sörloth	Timo Werner	€34,566,950	€9,000,000	€6,100,400
			€42,701,450	€20,000,000	
			€46,899,600	€53,000,000	

### Average Value Player Transfers

Average Value Bundesliga Transfers - Summer 2020/21					
Team	Arrivals	Departures	Intrinsic Value	Transfer Fee	Intrinsic Value Delta
FSV Mainz		Ridle Baku	€10,127,700	€10,000,000	€127,700
Bayer Leverkusen	Patrik Schick	Kai Havertz Kevin Volland	€30,393,000	€80,000,000	€49,607,000
			€23,057,100	€26,500,000	-€3,442,900
			€25,765,740	€15,500,000	-€10,265,740
Bayern Munich	Marc Roca Bouna Sarr Leroy Sané	Thiago	€30,116,350	€9,000,000	€21,116,350
			€25,276,680	€10,000,000	€15,276,680
			€35,352,350	€45,000,000	-€9,647,650
			€36,184,500	€22,000,000	-€14,184,500
FC Augsburg	Felix Uduokhai	Philipp Max	€13,266,000	€7,000,000	€6,266,000
			€16,849,360	€8,000,000	-€8,849,360
Werder Bremen	Leonardo Bittencourt Davy Klaassen		€10,057,300	€7,000,000	€3,057,300
			€15,699,200	€11,000,000	-€4,699,200

<b>WfL Wolfsburg</b>	Ridle Baku	Felix Uduokhai	<b>€20,829,600</b> <b>€18,027,900</b>	€7,000,000 €10,000,000	<b>-€13,829,600</b> <b>€8,027,900</b>
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### Poorer Value Player Transfers

Bad Value Bundesliga Transfers - Summer 2020/21					
Team	Arrivals	Departures	Intrinsic Value	Transfer Fee	Intrinsic Value Delta
<b>FC Union Berlin</b>		Sebastian Andersson	<b>€8,192,250</b>	€6,500,000	<b>-€1,692,250</b>
<b>Borussia Dortmund</b>	Jude Bellingham		<b>€18,130,750</b>	€23,000,000	<b>-€4,869,250</b>
<b>Hoffenheim</b>		Leonardo Bittencourt	<b>€16,732,100</b>	€7,000,000	<b>-€9,732,100</b>

Once again, these *Intrinsic Values* place a monetary value on each player's contribution to their respective teams winning matches in the Bundesliga, and these *Ratings* are dynamic and change with each game they play.

### 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.

### Further information and contact details

If you have any questions, or would like to enquire about further services provided by the Carteret Group, then please feel free to contact one of the team members listed below.

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