

# Software Rates vs Price of Function Points: A cost analysis

8th November 2012, 12:00

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UKMSA Conference 2012

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# Objective

Nowadays, in Software Development Contracts the key elements determining the price are:

- The Rate.
- The Effort.

The possibility to measure the quantity of software produced (the size in Function Points) allows us to assess whether there is a logical connection between:

- The price of the projects.
- The software actually produced.

The main goal of this presentation is to:

- Determine if there is a logic relation between rates and the price of the Function Point.
- Draw conclusions on the economic management of software development.

## Background

Over the last five years, LEDAmc has managed the productivity of more than 10,000 development projects of 10 significant clients in Spain (primarily telecommunication and financial companies).

They were mainly small enhancement projects.

The main goal of the measures is to control big contracts of Adaptive Maintenance, which implies the highest percentage of our clients development budget.

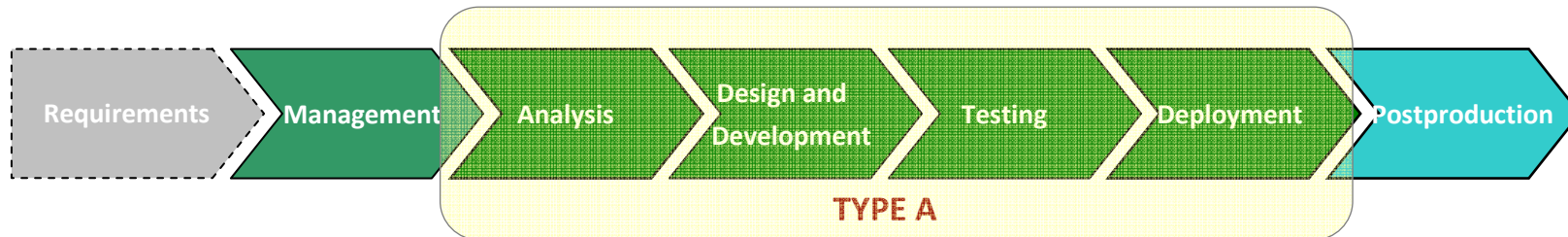
Out of these 10,000 projects we have selected 3,405 for the study.

These 3,405 projects were carried out by 14 different providers. The most significant are multinational providers working in other countries with the same or similar clients.

# Background

The 3,405 projects were selected by periods and homogenized considering:

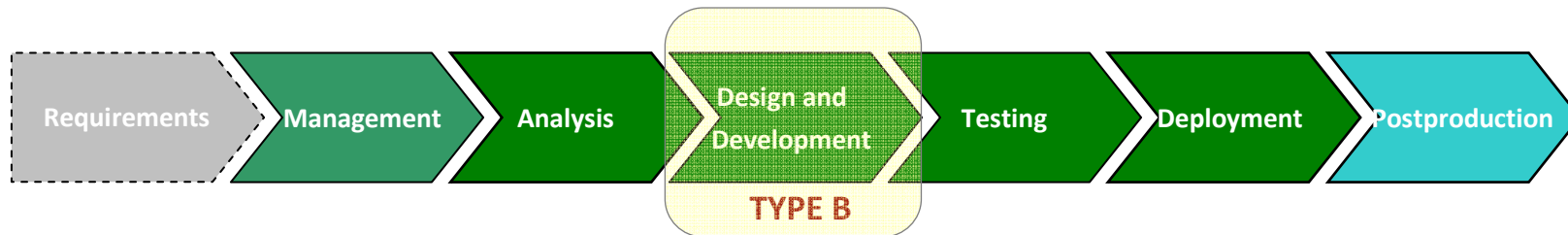
- That the data sets of every provider of each client were statistically consistent.
- That the measured effort was equivalent within all the projects.



# Background

The 3,405 projects were selected by periods and homogenized considering:

- That the data sets of every provider of each client were statistically consistent.
- That the measured effort was equivalent within all the projects.



- That the prices were applied to the same concepts.
- That the method used to measure the projects was the same (IFPUG).
- The measurement have been executed or audited by CFPS

# Background

The basic magnitudes of the sample are:

- **10 Clients**
- **14 Providers**
- **3405 Projects**
- **196,356 UFP**
- **2,168,192 Hours**
- **69,926,907 Million Euros**

Most of the measures belong to Adaptive Maintenance of small size (about 60 FP on average).

# Data Confidentiality

The main problem of carrying out this study is the confidentiality that LEDAmc is obliged to keep to its clients.

It is obvious that we cannot tell that the productivity of the provider **X** in our client **Y** is **Z**.

And not to mention that the rate of the provider **XX** in our client **YY** is **ZZ**.

In order to solve this problem, the following precautions have been taken:

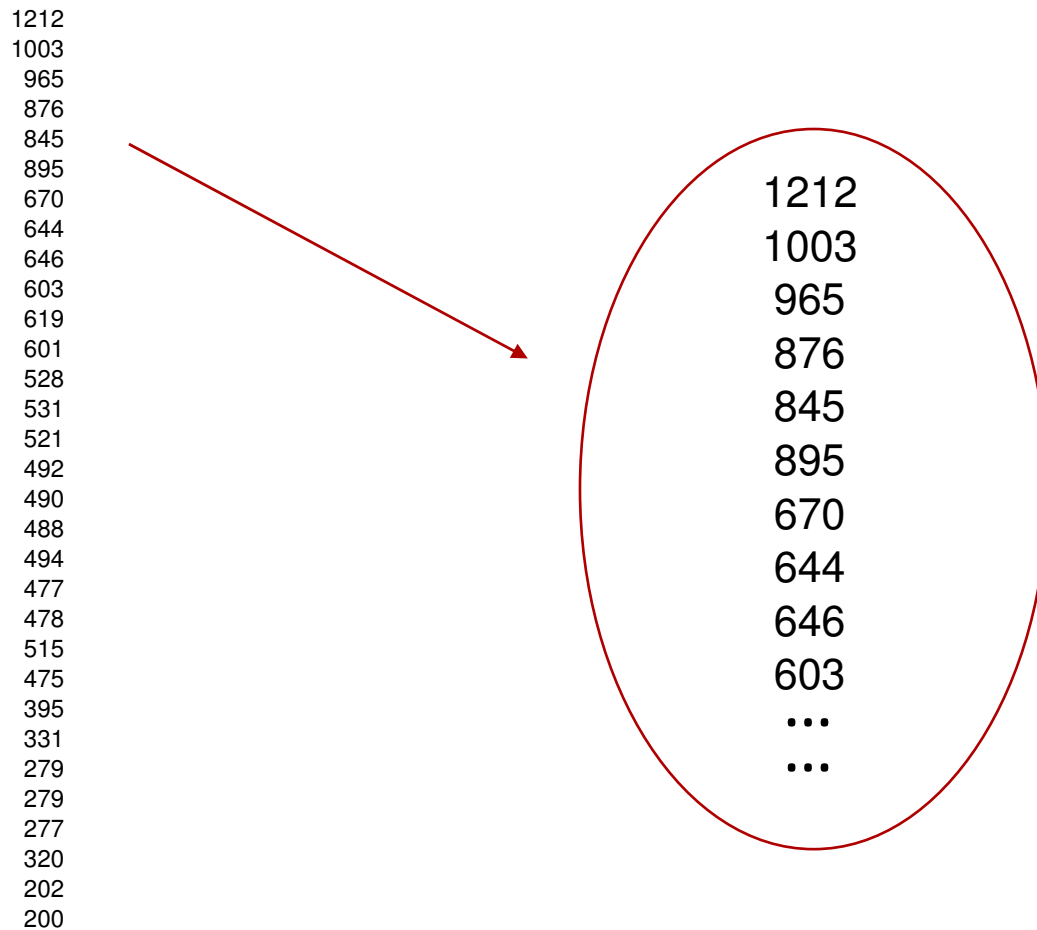
1. The clients are anonymous and they vary from **CL-A** to **CL-J**.
2. The providers are also anonymous and they vary from **P1** to **P14**.
3. The data used is:
  - **Productivity** (FP per manday).
  - **Price of the Function Point**.
  - **Rate**.

It was converted into base 100, as the following slides explain.



# Data Confidentiality

The list of prices of the Function Point (from the highest to the lowest) for every provider in each client is something like (this is an example, not the real list):



# Data Confidentiality

The list of prices of the Function Point (from the highest to the lowest) for every provider in each client is something like (this is an example, not the real list):

1212  
1003  
965  
876  
845  
895  
670  
644  
646  
603  
619  
601  
528  
531  
521  
492  
490  
488  
494  
477  
478  
515  
475  
395  
331  
279  
279  
277  
320  
202  
200

Conversion to a chart  
with base 100



1212      100  
1003      83  
965      80  
876      72  
845      70  
895      74  
670      55  
644      53  
646      53  
603      50  
619      51  
601      50  
528      44  
531      44  
521      43  
...      ...  
...      ...

# Data Confidentiality

The list of prices of the Function Point (from the highest to the lowest) for every provider in each client is something like (this is an example, not the real list):

1212		1212	100
1003		1003	83
965		965	80
876		876	72
845		845	70
895		895	74
670		670	55
644		644	53
646		646	53
603		603	50
619		619	51
601		601	50
528		528	44
531		531	44
521		521	43
492		...	...
490			
488			
494			
477			
478			
515			
475			
395			
331			
279			
279			
277			

Conversion to a chart  
with base 100



Proceeding this way with the real data we obtain the starting matrix for the study:

Cliente	Proveedor	PRODUCT OPERATIVA	PRECIO PF	TARIFA
CL-A	P1	PROD1	PPF1	T1
CL-B	P1	PROD2	PPF2	T2
CL-C	P11	PROD3	PPF3	T3
CL-D	P2	PROD4	PPF4	T4
CL-D	P3	PROD5	PPF5	T5
CL-D	P4	PROD6	PPF6	T6
CL-D	P5	PROD7	PPF7	T7
CL-D	P7	PROD8	PPF8	T8
CL-D	P8	PROD9	PPF9	T9
CL-E	P12	PROD10	PPF10	T10
CL-E	P13	PROD11	PPF11	T11
CL-E	P3	PROD12	PPF12	T12
CL-E	P4	PROD13	PPF13	T13
CL-E	P5	PROD14	PPF14	T14
CL-E	P7	PROD15	PPF15	T15
CL-E	P8	PROD16	PPF16	T16
CL-E	P9	PROD17	PPF17	T17
CL-F	P2	PROD18	PPF18	T18
CL-F	P5	PROD19	PPF19	T19
CL-F	P3	PROD20	PPF20	T20
CL-G	P1	PROD21	PPF21	T21
CL-G	P3	PROD22	PPF22	T22
CL-G	P6	PROD23	PPF23	T23
CL-H	P1	PROD24	PPF24	T24
CL-H	P2	PROD25	PPF25	T25
CL-H	P4	PROD26	PPF26	T26
CL-H	P5	PROD27	PPF27	T27
CL-H	P6	PROD28	PPF28	T28
CL-I	P10	PROD29	PPF29	T29
CL-I	P14	PROD30	PPF30	T30
CL-J	P3	PROD31	PPF31	T31

The basic element of the matrix  
is **CLIENT-PROVIDER**  
(and there are 31)

The data:  
**Productivity**  
**FP PRICE**  
**Rate**

Cliente	Proveedor	PRODUCT OPERATIVA	PRECIO PF	TARIFA
CL-A	P1	PROD1	PPF1	T1
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CL-D	P8	PROD9	PPF9	T9
CL-E	P12	PROD10	PPF10	T10
CL-E	P13	PROD11	PPF11	T11
CL-E	P3	PROD12	PPF12	T12
CL-E	P4	PROD13	PPF13	T13
CL-E	P5	PROD14	PPF14	T14
CL-E	P7	PROD15	PPF15	T15
CL-E	P8	PROD16	PPF16	T16
CL-E	P9	PROD17	PPF17	T17
CL-F	P2	PROD18	PPF18	T18
CL-F	P5	PROD19	PPF19	T19
CL-F	P3	PROD20	PPF20	T20
CL-G	P1	PROD21	PPF21	T21
CL-G	P3	PROD22	PPF22	T22
CL-G	P6	PROD23	PPF23	T23
CL-H	P1	PROD24	PPF24	T24
CL-H	P2	PROD25	PPF25	T25
CL-H	P4	PROD26	PPF26	T26
CL-H	P5	PROD27	PPF27	T27
CL-H	P6	PROD28	PPF28	T28
CL-I	P10	PROD29	PPF29	T29
CL-I	P14	PROD30	PPF30	T30
CL-J	P3	PROD31	PPF31	T31

Reference data

Weighted mean Productivity:

0,62 FP/Manday

Weighted mean price of the FP:

456 €

## Analysis Results

The results that we are going to show are quite obvious for anyone who has managed productivity models with clients.

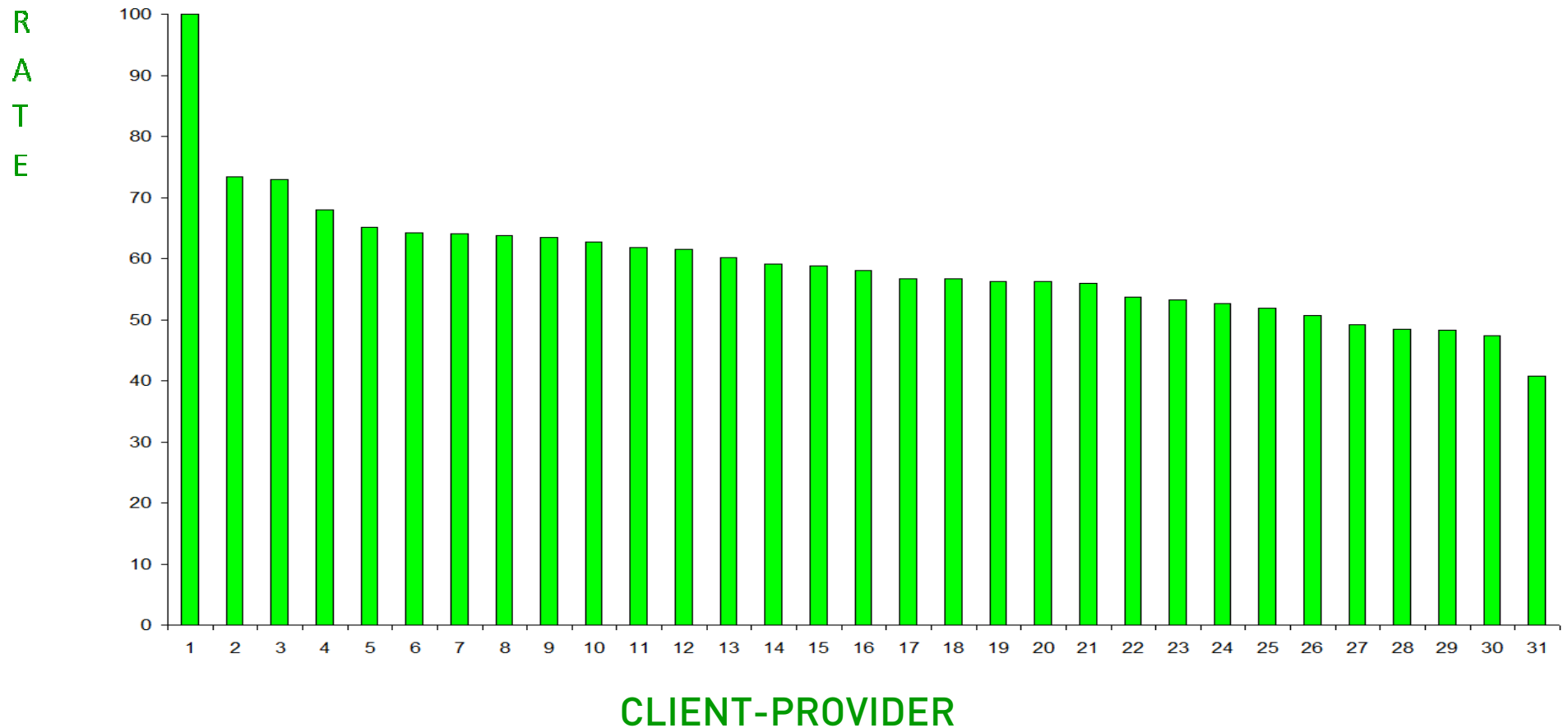
However, they are not that obvious for the ones who either do not use or do not want to use these type of models.

(Or for the ones who do not understand them or do not want to understand them)

The focus of this presentation is:

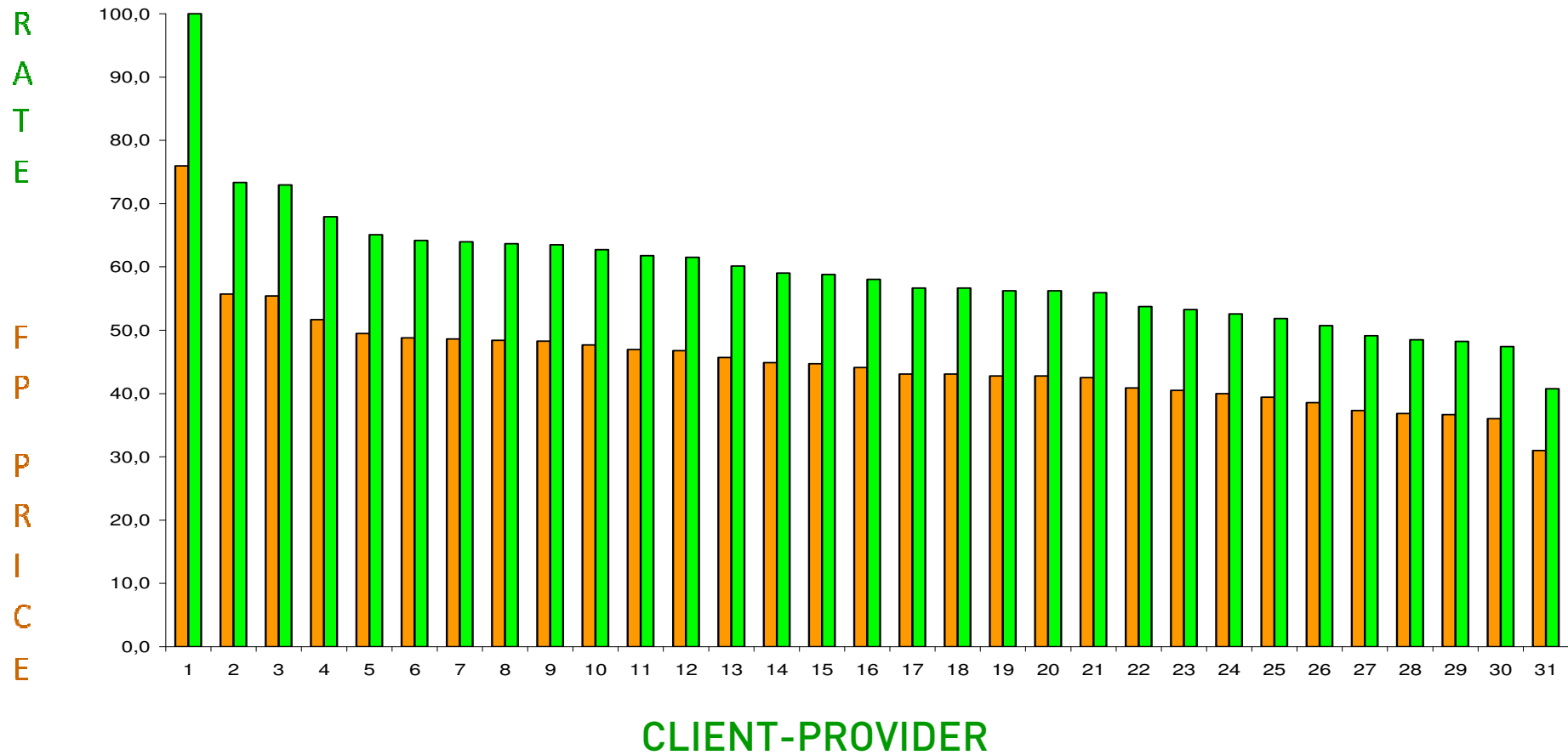
- To prove the obvious with data.
- Draw conclusions for economic management of the software development.

Results: 1 The relationship between FPP and Rate is not logical



- This is the ranking of the sample's rates.

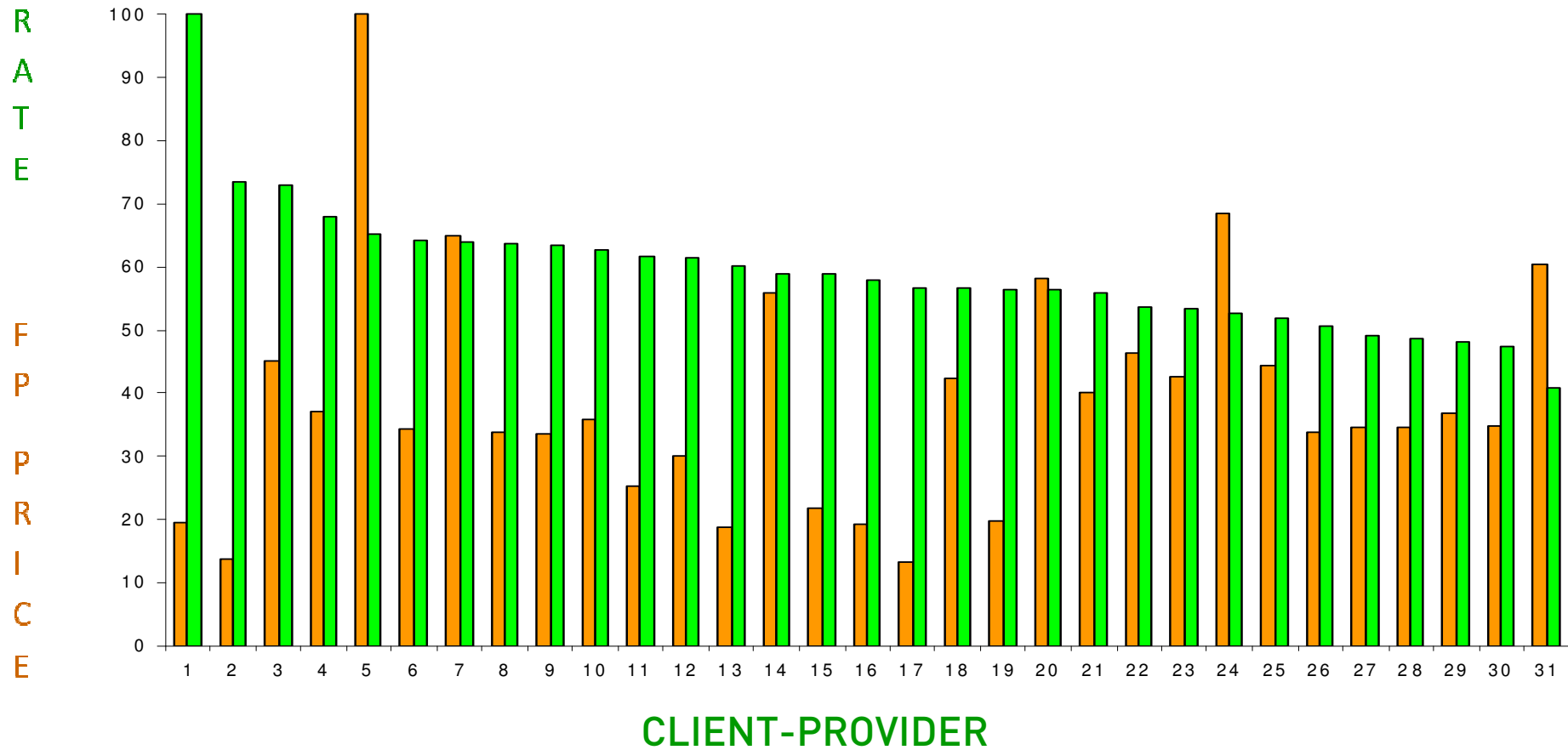
Results: 1 The relationship between FPP and Rate is not logical



- This would be the expected result of the relation between Rate/FP Price.



Results: 1 The relationship between FPP and Rate is not logical



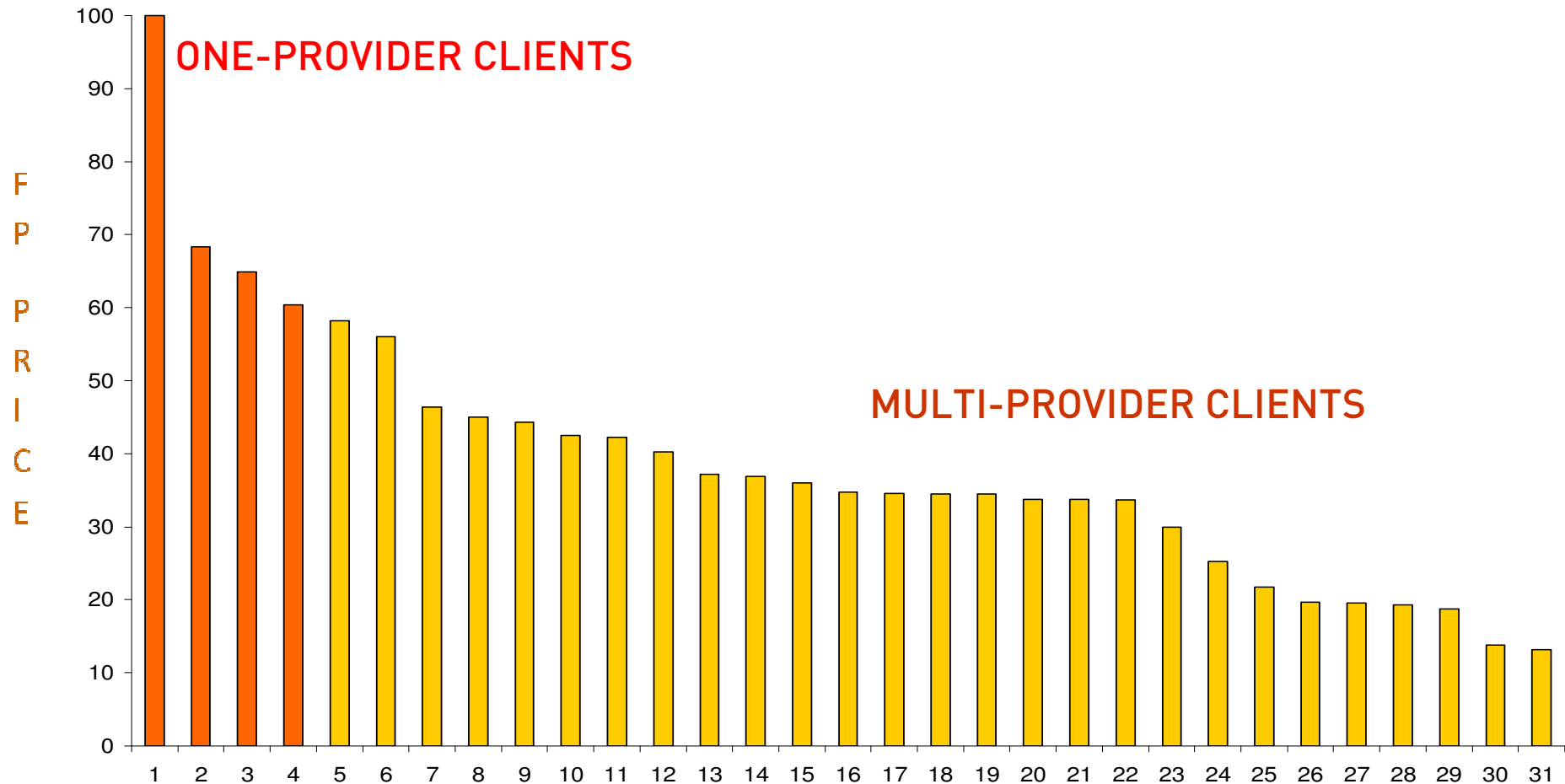
- This is the actual result

Results: 1 The relationship between FPP and Rate is not logical



- Low rates have high FP Price.
- Medium rates have generally low PRICES (much lower than low rates).
- High rates have very low PRICES and very high PRICES.

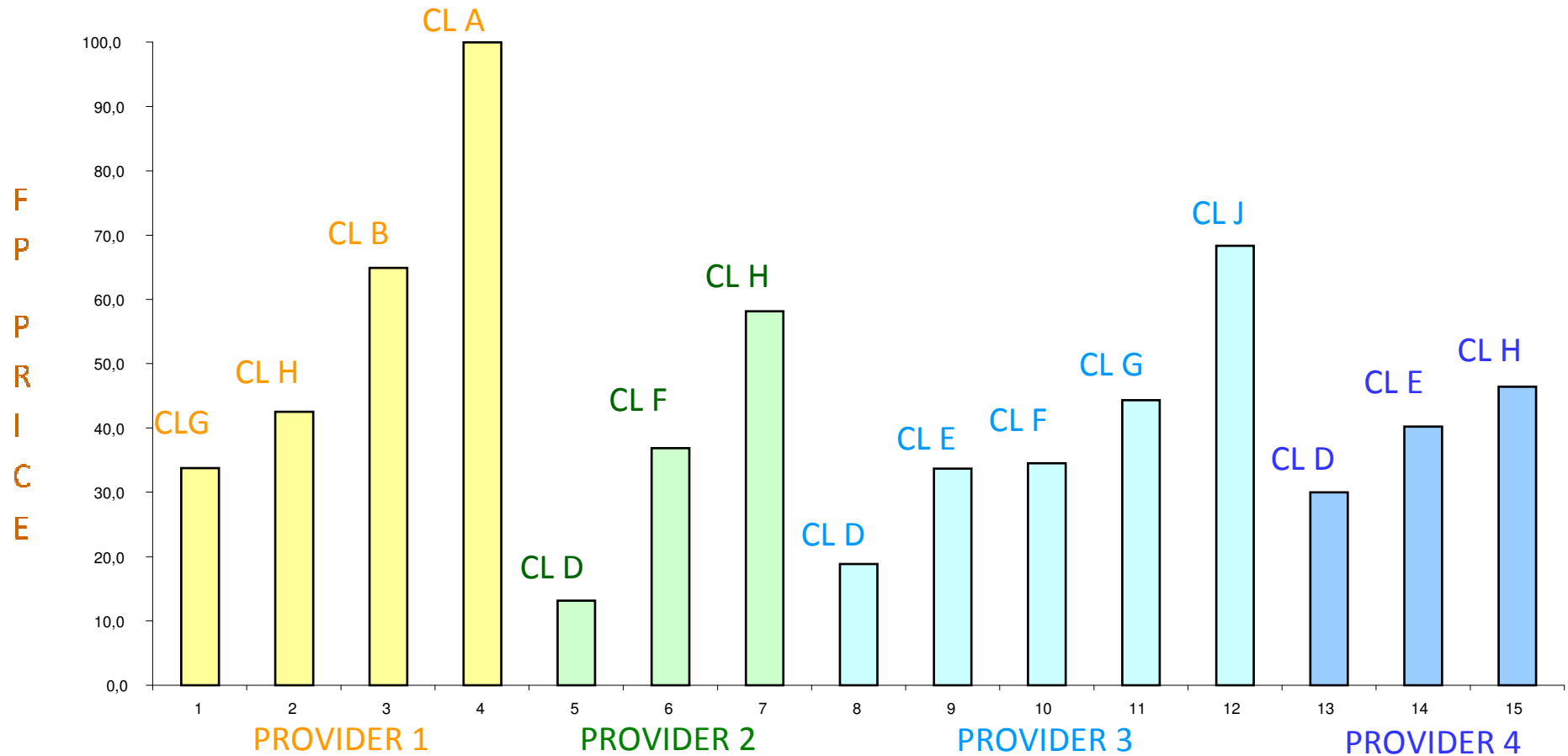
Results: 2 The price of the FP using only one provider is higher



Even though the chart looks “too perfect”, it is real.

Results:

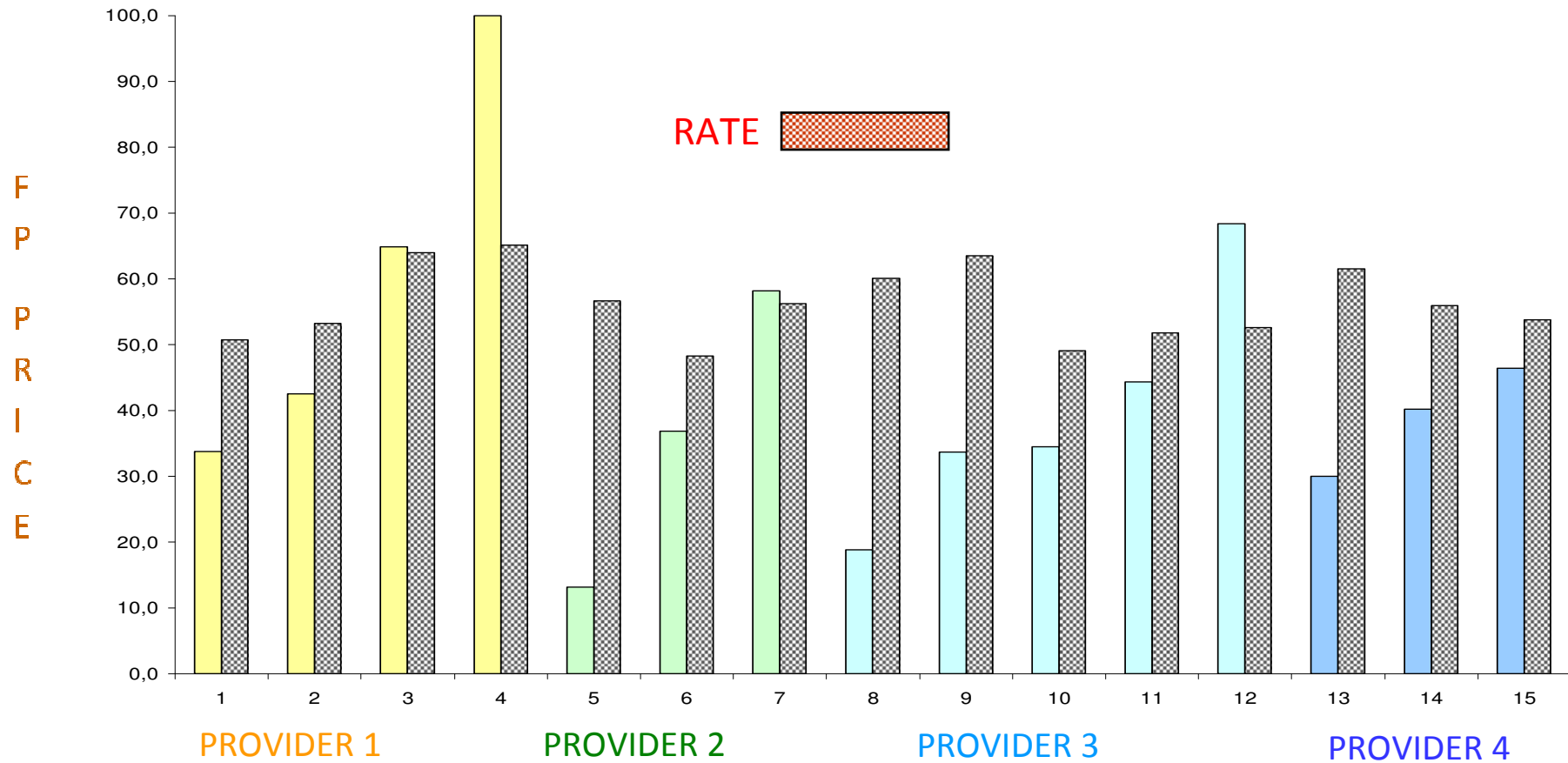
### 3 The behaviour of the providers is uncertain



- The differences in FP price among the various clients are clearly unjustified.
- The differences within the clients should not have this impact.

Results:

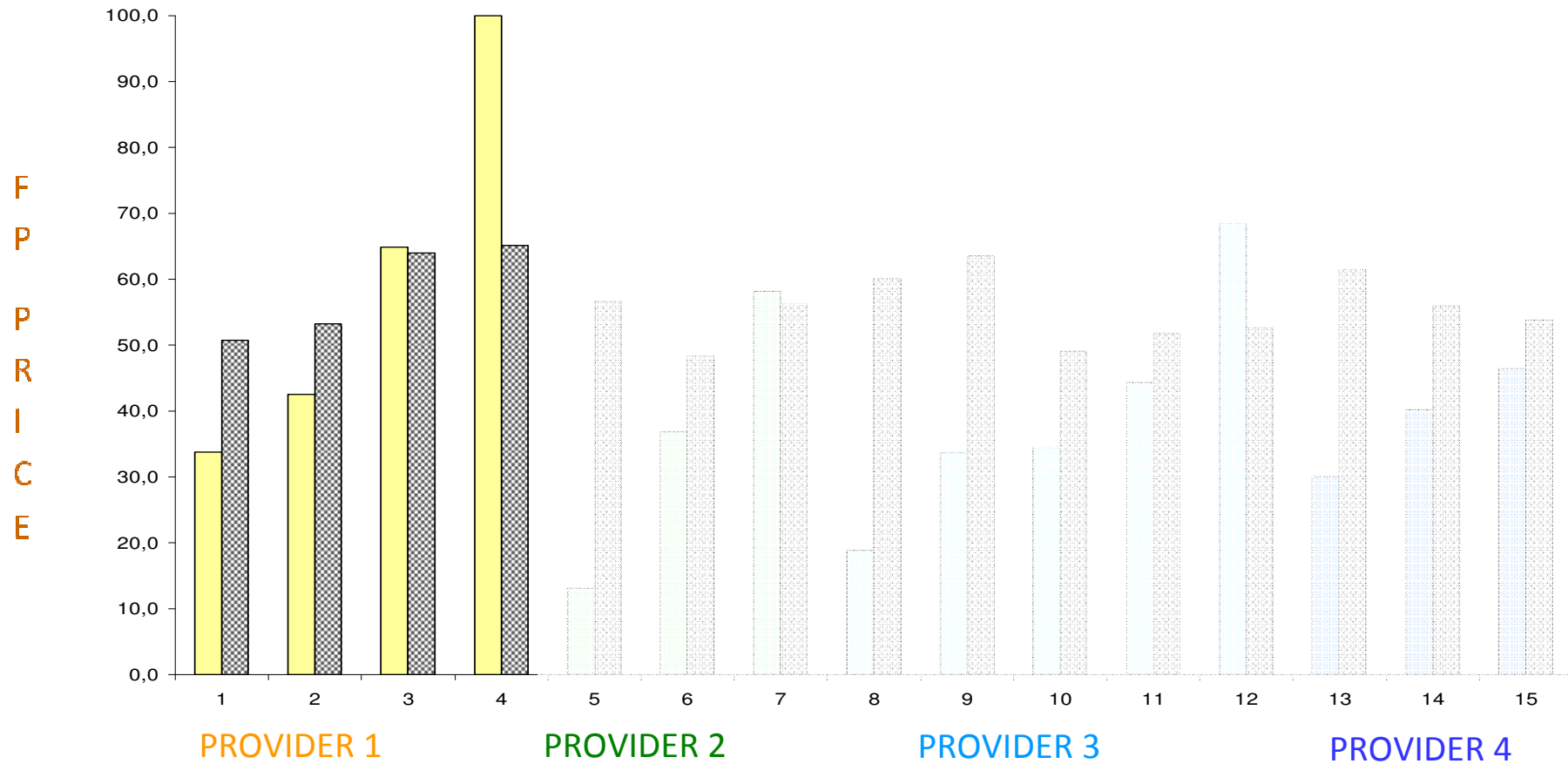
### 3 The behaviour of the providers is uncertain



- When we include the rates, the results become even more odd.

## Results:

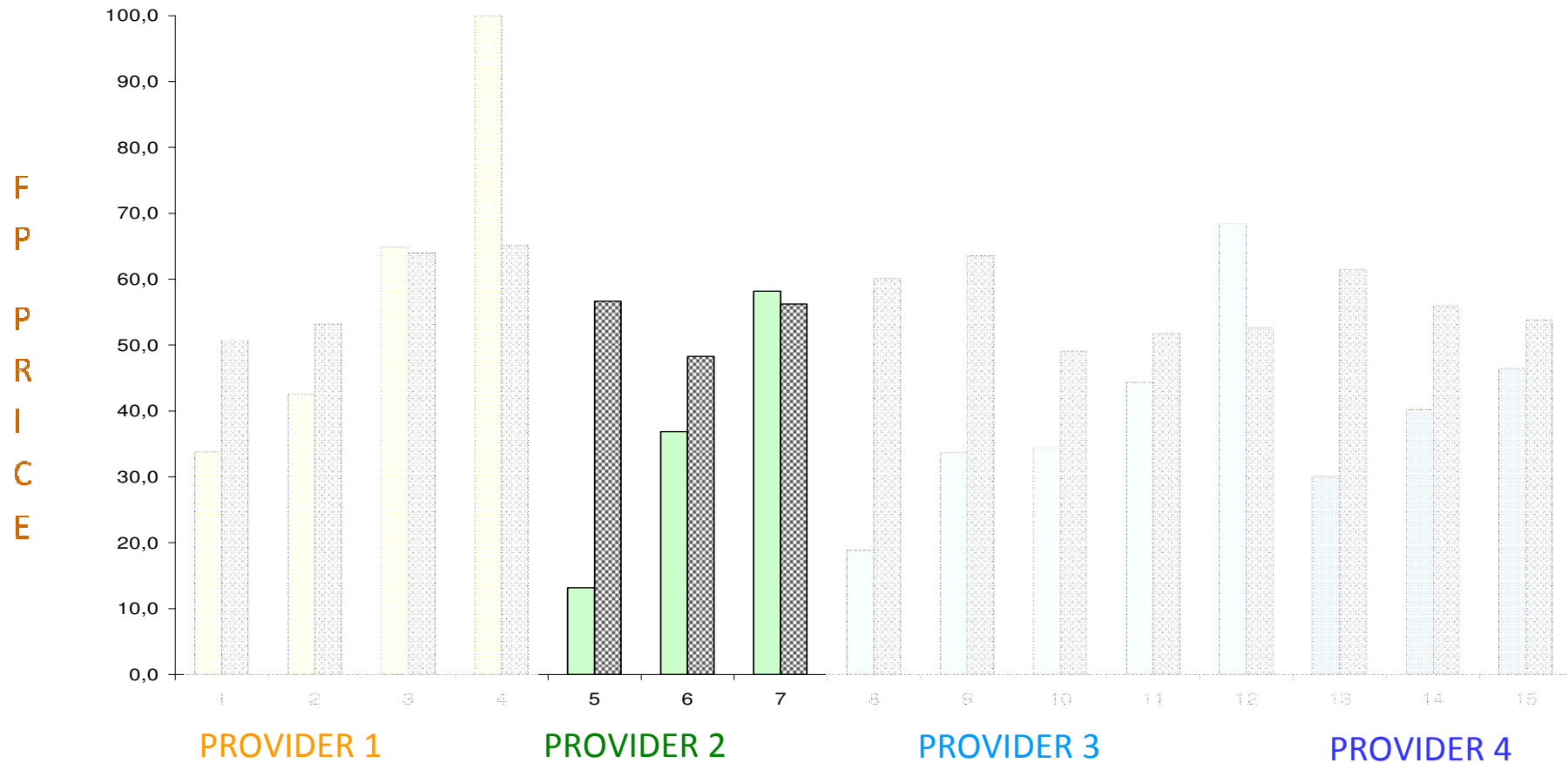
### 3 The behaviour of the providers is uncertain



- The relation of the rates in this provider (higher vs lower) is 1,3.
- Between PF PRICES the relation is 3.

## Results:

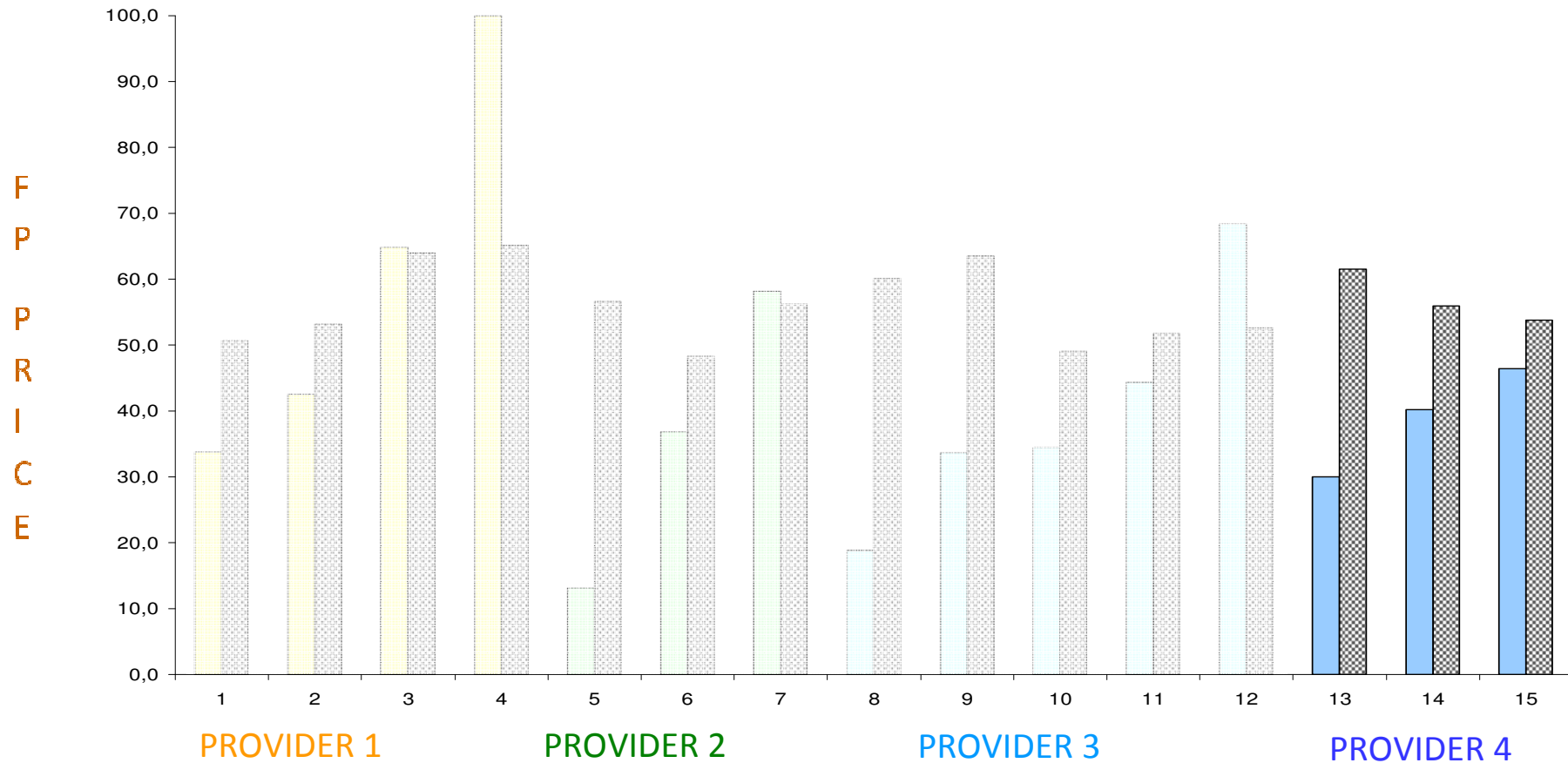
### 3 The behaviour of the providers is uncertain



- This provider has similar rates for its three clients.
- However, the higher FP PRICE is 4,4 times the lowest price.

## Results:

### 3 The behaviour of the providers is uncertain

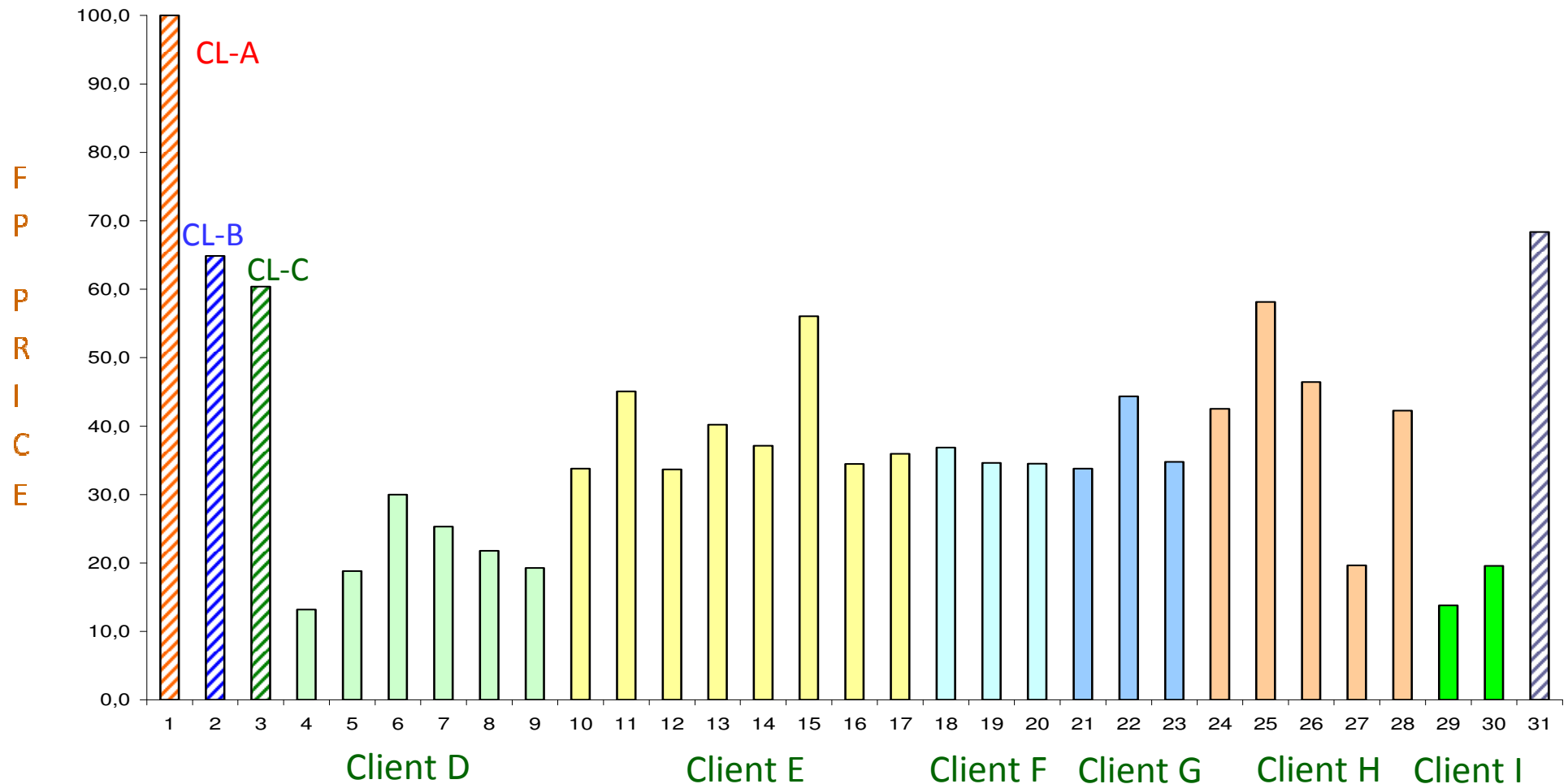


- In this provider, the higher the rate, the lower the price for the FP (not bad).
- And the highest PRICE is only 1.5 the lowest.



Results:

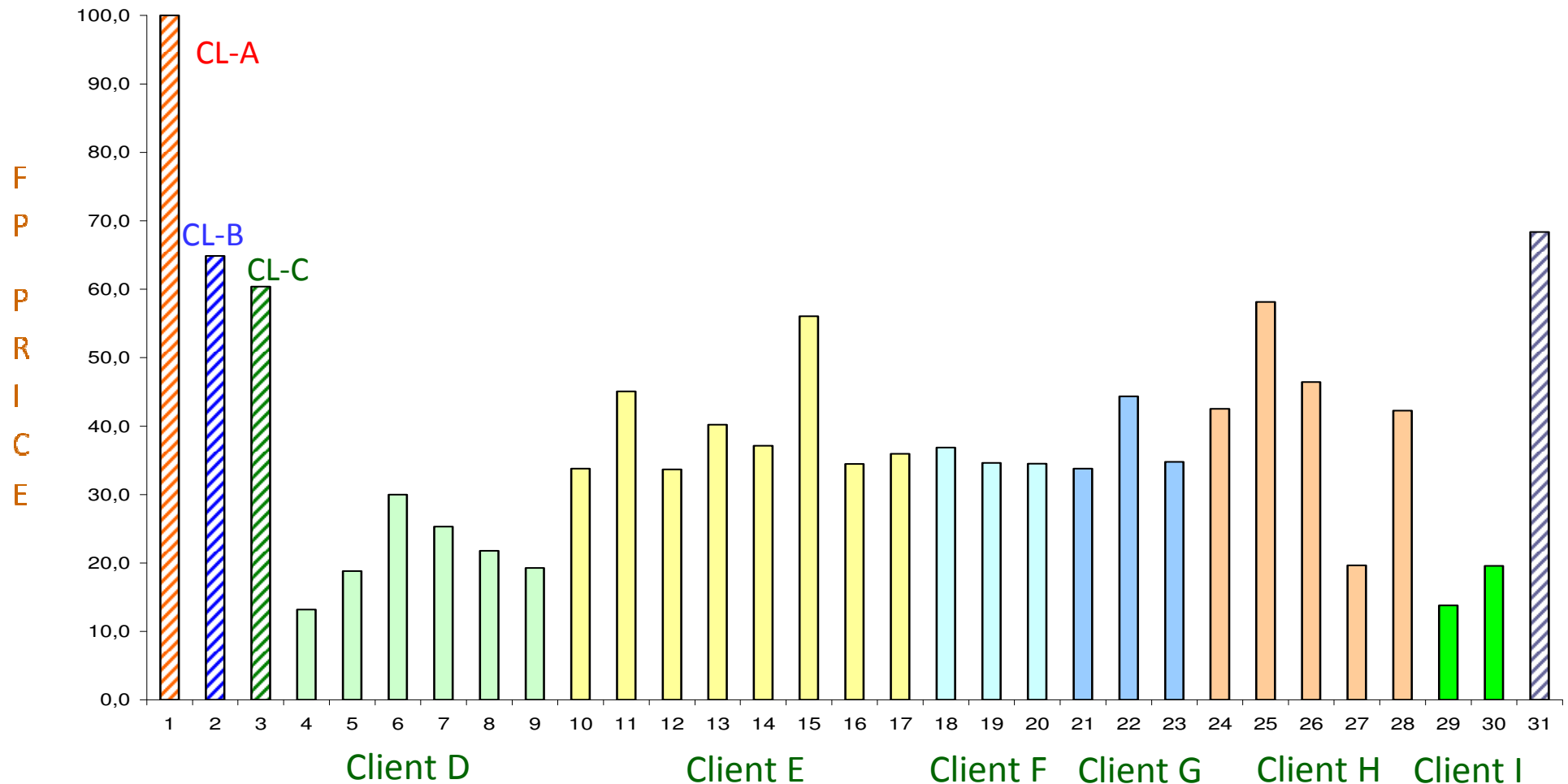
4 When looking at the Clients, the situation changes



- The price of the Function Points does not vary so much for each client, because they control it.
- It changes between clients (because they do'nt share information, its not a standard)

Results:

4 When looking at the Clients, the situation changes



There are references when talking about rates.

There are no references when it comes to FP price.

## Conclusions:

Before dealing with the conclusions we need to answer two questions:

Do the differences between the clients justify the detected inconsistencies?

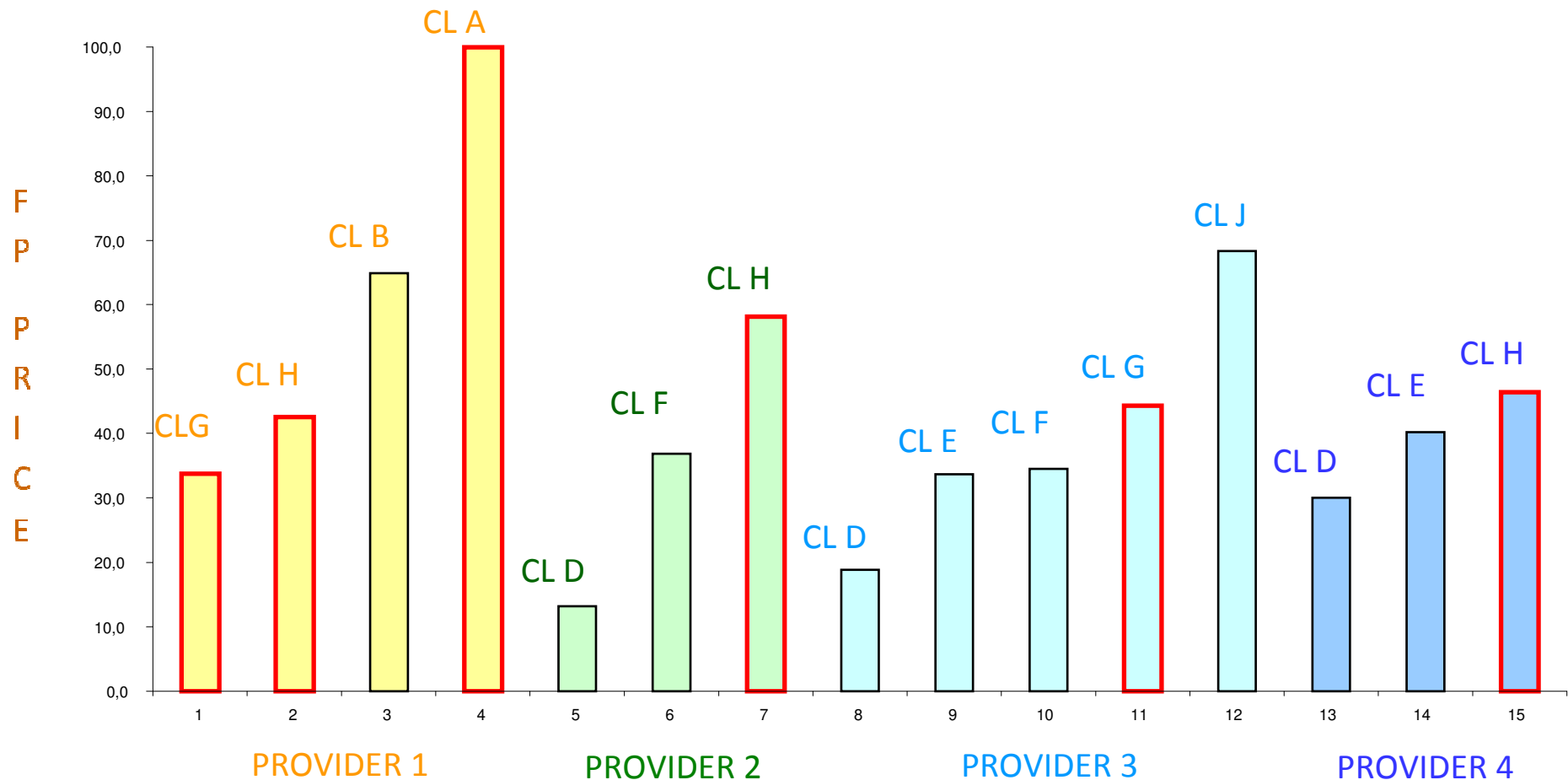
Are these results significant for other countries?

## Do the differences between the clients justify the detected inconsistencies?

1. The client's maturity level is similar.
2. So is the type of the contracts.  
  
(Big maintenance contracts based on small petitions)
3. The competence of the providers is high, and similar.
4. Their activities within the clients is similar. (And in any case it's been homogenized)
5. Both technological platforms and systems structure are very complex (Size + history). Some of them are more complex than average, and some are easier.
6. This also happens with the management of the contracts and of the development life cycle.

We have identified 4 clients “more difficult to work with than average”, 5 average and 1 easier.

Do the differences between the clients justify the detected inconsistencies?



But even introducing this factor, we don't find significant changes

## Are these results significant for other countries?

1. The most significant companies of the sample are multinational.
2. In some cases, the RFP are identical with others around the world.
3. Many of the providers work for the same clients in different countries.
4. In many cases the providers use software factories outside of Spain (India, Latin-American ) which give support to different countries.
5. When we introduce ISBSG data in our benchmarking, the local data is consistent with the one from ISBSG.
6. There might be local differential characteristics regarding three aspects:
  - Salaries.
  - Productivities.
  - Training.

Accepting local variations, the results should be generally applicable to a wider context.


## Conclusions (I):

1. There is not a logical relationship between Rates and FP Price.
  - >>> The market works with rates (**effort**), not with FP Price (**product**).
  - >>> Software development remains an artisan activity, not as an industrial one.
2. The performance of the providers changes dramatically between clients.
  - >>> The only reason for the size of such changes is the lack of information.
  - >>> With FP Price standards in the market the differences should shorten sharply.
3. Pressure to lower rates ends up in lower productivity and higher FP price.
  - >>> The real problem is shared between the clients and the providers.

## Conclusions (II):

4. It is vital to advance in the concept of “product software management”
  - >>> IT governance metrics should be focused on the product (not on effort).
  - >>> *“FP are the only metric that can measure quality, productivity, costs, value and economics without distortion.” (Capers Jones).*
  
5. Benchmarking is the way to convert theoretical standards in market standard.
  - >>> Sharing information is the way to proceed.
  - >>> Benchmarking information should not be a secret.
  - >>> Any industrial good has a price, and is public.





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