Article

Registration lags on the UK Inter-Departmental Business Register between 2011 and 2021

Time lags from registration to birth of businesses on the Inter-Departmental Business Register, 2011 to 2021

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1 . Main Points

- This article explores time lags between registration of businesses with HM Revenue and Customs (HMRC) and their appearance on the Inter-Departmental Business Register (IDBR).

- For the 97.9% of enterprises where we can measure the lag, the median and mean registration lags are 49 days and 106 days, respectively.

- The 60.3% of enterprises birthed from standard Value Added Tax (VAT) registrations are timely, with a median lag of 16 days, whereas the 37.2% of enterprises birthed from Pay As You Earn (PAYE) registrations have a longer median lag of 116 days, because the data feed is quarterly.

2 . Results: differences in birthdates on the Inter-Departmental Business Register between 2011 and 2021

Differences between enterprise and reporting unit birthdates across all enterprises

We calculate the difference between reporting unit birthdates and enterprise birthdates in days. The median lag is 56 days, and the mean lag is 158 days.

Table 1: Differences between reporting unit and enterprise birthdate across all enterprises since 2011

Range	Count	Proportion
Less than –90 days	12,081	0.3%
-90 to -1 days	273,063	7.0%
0 to 90 days	2,172,598	55.9%
91 days to 2 years	1,312,749	33.8%
More than 2 years	114,990	3.0%
Total	3,885,481	100%

Source: ONS Data – Inter-Departmental Business Register

Figure 1: Histogram of differences between reporting unit and enterprise birthdate across all enterprises since 2011

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These results show that lags are generally small, with most lags at fewer than 90 days. The median lag is short at 56 days. However, a small number of extreme cases increase the mean lag to 158 days; 3% of enterprises have lags longer than two years, which are not shown in the histogram. Interestingly, 7% of lags are small negative lags. These are caused by future dated Value Added Tax (VAT) registrations: businesses can register for VAT before they are required to and submit a future date.

Differences between enterprise and reporting unit birthdates in spinoff enterprises

An enterprise caused by the movement of an existing admin unit is a spinoff enterprise. These enterprises have very large differences between their enterprise and reporting unit birthdates and as seen in table 2, they also have very large differences between their original enterprise and reporting unit birthdates. Original date differences in spinoff enterprises do not represent a registration lag because the admin unit the enterprise birthdate corresponds to pre-dates the new enterprise.

Table 2: Differences between original reporting unit and enterprise birthdates in spinoff enterprises

	Non-Spinoff	Spinoff
Count	3,805,542 (97.9%)	79,880 (2.1%)
Median Lag (days)	49	687
Mean Lag (days)	106	1799

Source: ONS Data – Inter-Departmental Business Register

Differences between original reporting unit and enterprise birthdates in non-spinoff enterprises

To obtain a better measure of registration lags we used the first enterprise birthdate each enterprise is associated with. We also remove spinoff enterprises because a meaningful registration lag cannot be estimated for them using birthdates on the Inter-Departmental Business Register (IDBR). These results represent the lags we would expect for a newly registered business under current processes.

Table 3: Differences between original reporting unit and enterprise birthdate in non-spinoff enterprises

Range	Count	Proportion
Less than –90 days	58	0.0%
-90 to -1 days	327,056	8.6%
0 to 90 days	2,201,639	57.9%
91 days to 2 years	1,218,933	32.0%
More than 2 years	57,856	1.5%
Total	3,805,542	100%

Source: ONS Data – Inter-Departmental Business Register

Figure 2: Histogram of differences between original reporting unit and enterprise birthdate in non-spinoff enterprises

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These results show a 49.7% reduction in large positive lags and 99.5% reduction in large negative lags. The similarity of the histograms reflects that most enterprises are unaffected; the impact of the movement of admin units is relatively small.

Differences in lags between Value Added Tax (VAT) and Pay As You Earn (PAYE) registrations

Once we had obtained our best measure of registration lags shown above, we explored factors driving differences in lags between enterprises. The major factor our analysis identified was the type of admin unit causing the initial registration of the enterprise.

We looked at the admin units associated with each enterprise on the first extract it appeared on the IDBR. For each enterprise we created a list of original admin units and then split enterprises into different categories. The primary categories are VAT-only and PAYE-only.

We also draw a distinction between different types of VAT registration. VATs can form VAT groups, which are comprised of a single representative VAT and at least one non-representative VAT. Representative VATs have the same properties as a regular VAT, but non-representative VATs are treated differently by IDBR processes. If they generate a new enterprise, they must be processed clerically.

Some enterprises (1.8%) first appear in the quarterly extracts with multiple types of admin unit at once. For these enterprises it is unclear which admin unit triggered the creation of the enterprise because only changes between extracts can be identified.

Figure 3: Histogram of differences between original reporting unit and enterprise birthdates caused by VAT and PAYE

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Table 4: Differences between original reporting unit and enterprise birthdate in non-spinoff enterprises by admin source

First Admin Unit	Count	Median Lag (days)	Mean Lag (days)
VAT (excluding non-rep)	2,294,213 (60.3%)	16	56.9
PAYE	1,418,337 (37.2%)	116	183.0
Non-rep VAT	23,798 (0.6%)	64	119.8
Multiple Types	69,194 (1.8%)	96	129.5

Source: ONS Data – Inter-Departmental Business Register

We can see that VAT-driven registrations have substantially smaller lags on average. Non-rep VAT's, which are processed clerically, have a smaller median lag than PAYE registrations. The reason for this is that the Office for National Statistics (ONS) receives VAT data in a daily feed, whereas PAYE updates are received quarterly, imposing a considerable delay on registrations.

Enterprises first appearing in a quarterly extract with multiple admin sources have relatively small lags, falling between the typical VAT and PAYE range.

Another factor that may increase PAYE-driven lags is the processing of PAYE registrations received with 0 employment. The IDBR requires PAYE units to have at least 1 employment, so some births are delayed until the PAYE is updated. This delay will last at least a quarter and can last months or years. We have not been able to isolate this effect, but we believe this accounts for many extreme PAYE lags.

3 . Glossary

Business

For the purpose of this release the term "business" is used to represent an enterprise.

Company

Companies are businesses that are legally separate entities from the owners. These owners have limited liability, meaning they are not wholly responsible for losses and debts.

Enterprise

An enterprise can be defined as the smallest combination of legal units (generally based on VAT and/or PAYE records) that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources.

Inter-Departmental Business Register

The Inter-Departmental Business Register (IDBR) is a comprehensive list of UK businesses used by government for statistical purposes. The IDBR provides the main sampling frame for surveys of businesses carried out by the Office for National Statistics (ONS) and other government departments. It is also an important data source for analyses of business activities.

The two main sources of input are Value Added Tax (VAT) and Pay As You Earn (PAYE) records from HM Revenue and Customs (HMRC). Additional information comes from Companies House, Dun and Bradstreet and the Office for National Statistics (ONS) business surveys.

4 . Data sources and quality

Measuring start of economic activity

When a business begins, economic activity is difficult to define and measure. This issue is described in [The UK Business Creation Process: The 2013 Panel Study of Entrepreneurial Dynamics Pretest (Reynolds, Hart and Mickiewicz, 2014)](#), which explores the problem in depth.

A business is required to register for Value Added Tax (VAT) within 30 days of reaching £85,000 rolling annual turnover or expecting to by the end of the next month. Pay As You Earn (PAYE) registration is required before an employee can be paid but no more than two months in advance. As a result, VAT and PAYE administrative data sources contain a wide coverage of the UK business population. There are important exceptions, mostly small businesses, with no employees, which are beneath the £85,000 threshold. In addition, some businesses are VAT exempt (such as dentists) and will only appear if they employ someone. The Inter-Departmental Business Register (IDBR) also covers many entities, which register for PAYE, such as schools and local authorities.

Within this project we have used the dates associated with VAT and PAYE registrations to estimate the registration lags on the register. VAT and PAYE birthdates represent the date from which a business is liable to register. Because this is self-reported, the dates have some intrinsic variability.

Companies House birthdates are available for 70.1% of enterprises. Companies House registration dates do not represent a meaningful point in time with respect to the start of economic activity. Registration with Companies House is necessary to become a limited company, which comes with legal benefits; however, a business may register for Companies House months or years before or after they begin economic activity.

Data used to measure registration lags

In our analysis we have primarily used data from the final quarter of 2021, which contains 10,917,472 unique enterprises in total. We exclude 465,299 enterprises that are out of scope of business surveys or with a missing enterprise birthdate, which are mainly shell enterprises or enterprises due to be deleted. This leaves 10,452,173 enterprises with an admin unit and enterprise birthdate. We then consider only those registrations since 1 January 2011 (3,885,481 enterprises). The latest registration in our dataset was on 6 November 2021. IDBR processes have remained largely unchanged since 2011 so these registrations are representative of current and future processes. For parts of our analysis, we have used quarterly extracts since 1998 to investigate movements of admin sources between enterprises.

Reporting unit birthdate

An enterprise is born with a reporting unit known as an enterprise reporter (also known as a 499 reporting unit) whose reporting unit birthdate corresponds to the date the enterprise was added onto the IDBR. Our analysis has been focused on the enterprise level, so reporting unit birthdates in our analysis refer to the date an enterprise was added to the IDBR. The reporting unit birthdate should not change.

We obtained the reporting unit birthdate for the enterprise on the first extract that enterprise appeared. We refer to this as the original reporting unit birthdate. Only 0.02% of reporting units had a different original reporting unit birthdate. The reason for many of these is a historical issue related to the initial migration of Northern Ireland businesses onto the register. A small number of cases may have been caused by clerical error.

Enterprise birthdate

The enterprise birthdate is the earliest admin unit birthdate associated with that enterprise. The enterprise birthdate can originate from a dead admin unit.

Enterprise birthdates can change if admin units move between enterprises. For example, an enterprise A with a VAT from 2015 and a PAYE from 2016 will have the enterprise birthdate from 2015. However, if the VAT moves to a different enterprise B during 2017, enterprise A's birthdate will become the PAYE birthdate from 2016. Enterprise B's enterprise birthdate will be 2015 if that is the earliest birthdate in that enterprise.

If Enterprise B was created because of the movement, its reporting unit birthdate will be the date in 2017 when the movement occurred. In this analysis we refer to enterprises generated in this way as "spinoffs", which usually have very large lags between enterprise and reporting unit birthdate.

We also obtain an original enterprise birthdate for each enterprise corresponding to the enterprise birthdate on the first extract an enterprise appeared. This enables measurement of the lag despite subsequent changes to the admin unit or enterprise. Enterprise birthdates have been changed for 6.8% of enterprises.

Spinoff enterprises

If an enterprise birth is caused by the movement of an existing admin unit, in this analysis we call the enterprise a "spinoff"; 2.1% of enterprises are formed in this way. These enterprises have very large differences between their enterprise and reporting unit birthdates. However, these lags do not represent registration lag because the admin unit the enterprise birthdate corresponds to pre-dates the new enterprise. Estimating the start of economic activity for spinoff enterprises is difficult and how to define it will depend on the user of the data.

5 . Future developments

PAYE Real Time Information (RTI) and non-representative Value Added Tax (VAT) registrations

Several projects are planned, which should help to reduce registration lags on the business register. For example, it is hoped that utilising Pay As You Earn (PAYE) RTI information from HM Revenue and Customs (HMRC) will reduce lags for PAYE-driven businesses by improving the timeliness of the PAYE feed. There is also a plan to automate the process for enterprises that are birthed by non-representative VATs, which should bring these registrations in line with other VATs and reduce demands on clerical resource.

Future recommendations

This project shows that obtaining an accurate measure of when an enterprise registered for VAT or PAYE from existing Inter-Departmental Business Register (IDBR) data is difficult. This difficulty is compounded for external users of the IDBR who may not have access to historical snapshots.

We propose an additional date variable for enterprises on the Statistical Business Register (SBR), which is the original enterprise birthdate. This new variable would be fixed, and the enterprise birthdate would continue to be updated as admin sources transfer between enterprises. This would facilitate further analysis and provide insight for users.

Looking forward to the Statistical Business Register

The SBR will change some IDBR processes considerably. In the future it could make use of new data sources, such as Corporation Tax and Self-Assessment data. Both have potential to provide better measures of when a business began economic activity. Self-assessment data would be useful for improving coverage of small businesses below the VAT and PAYE thresholds on the SBR. These data would enable coverage of these businesses; however, this will require careful analysis and linkage.

Our approach has made use of historical data not available to all users. It has required complex computations and in-depth knowledge of IDBR processes, making our methodology inaccessible to external users investigating registration lags. In the future the SBR will measure changes to variables in more detail than that obtained by measuring changes from IDBR quarterly data extracts. This will apply to time periods after SBR has been built and is operational. The history of changes provided by the SBR will enable accurate longitudinal analysis by all future SBR users.

6 . Related links

[Faster indicators of UK economic activity: Value Added Tax returns](#) Project | Released 18 March 2019 The Faster indicators of UK economic activity project's goals are to identify close-to-real-time big data or administrative data sources, which represent useful economic concepts and create a set of indicators. This allows early identification of large economic changes to provide insight into economic activity at a level of timeliness and granularity not currently possible with official economic statistics

7 . Cite this article

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