



Re-thinking economic risks to retail credit portfolios

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Abstract

The impact of the Great Recession and subsequent heightened economic volatility have emphasized the importance of economic conditions as drivers of credit performance and prompted a range of approaches to incorporating economic variables within credit risk models. Extant methodologies utilize a variety of data structures, model specifications and estimation routines, but have in common the use of a relatively limited set of 'headline' economic metrics (or functions of those metrics). These metrics have been defined by national economic statisticians to provide insight into general trends in economic activity and the functioning and performance of economies, rather than as targeted measures of economic risk related to retail credit performance. They may at best provide more or less adequate proxies for situational economic factors more directly related to credit outcomes. This paper considers the potential for, and value of, defining more targeted measures of economic risk to retail credit, and illustrates using labour market data for the UK.



Re-thinking economic risks to retail credit portfolios

Outline

- A variety of data structures, model specifications and estimation methods have been used to explore links between economic conditions and retail credit risk
- Limited investigation of relevant economic metrics other than for small set of 'headline' variables – typically macroeconomic time series related to:
 - ▶ General economic activity
 - ▶ Employment / unemployment
 - ▶ Asset values
 - ▶ Cost of credit
- At best proxies for proximate for economic conditions directly related to credit risk
- More thorough investigation of available economic data may provide more targeted measures.
- Illustrate using UK labour market data

How do we find reliable measures / proxies for economic risk?

Need to dig deeper into economic data?



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Risk Metrics: Barely scratching the surface

Examples of UK Time Series data sources at quarterly frequency or higher

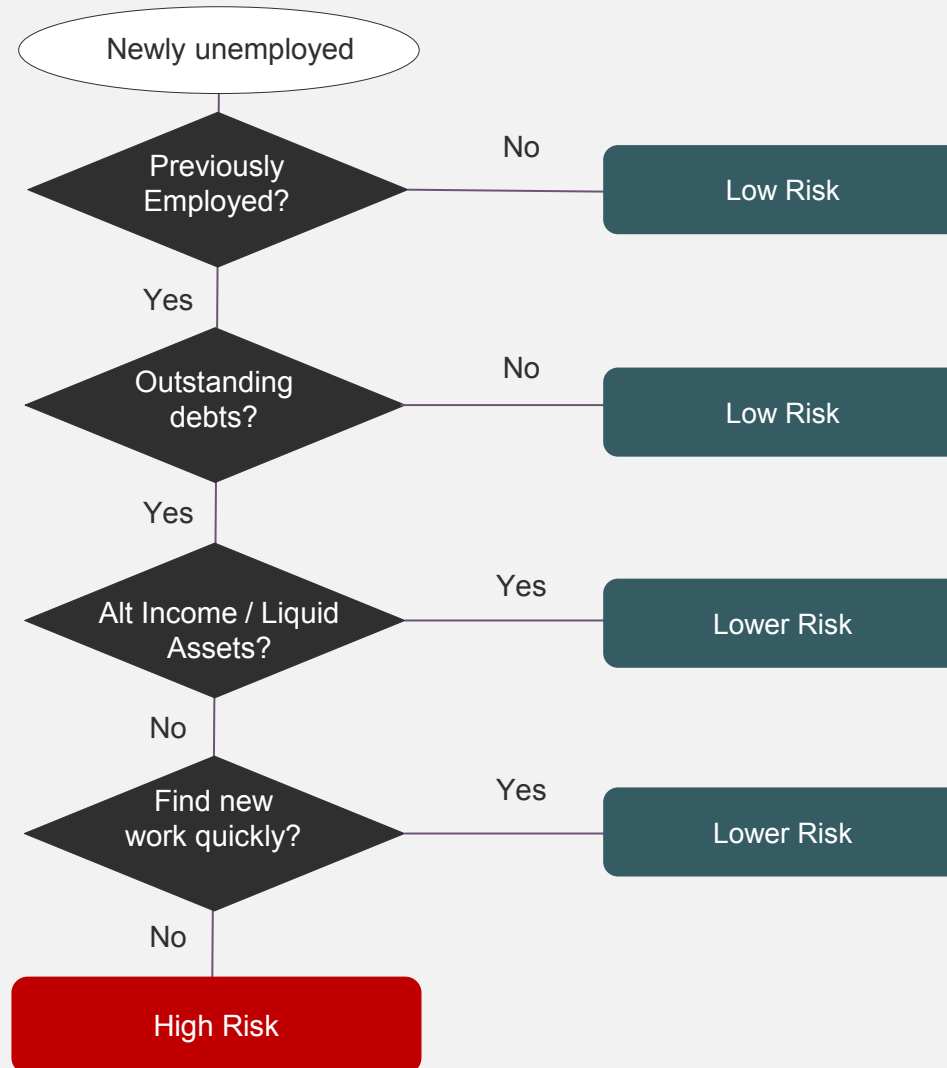
Source	Related to:	Total Series	Potentially Relevant	Widely Used
ONS National Accounts	Economic activity, Household Incomes, Assets & Expenditure, etc.	> 2000	> 500	< 10
ONS Consumer Prices	Consumer & Retail Prices, Cost of Living, etc.	> 2000	> 200	< 5
ONS Labour Market Statistics	Employment, unemployment, wages, etc.	> 800	> 300	< 10
ONS NOMIS	Annual Population Survey / Labour Force Survey	> 1200	> 200	< 10
	Claimant Count Statistics	> 3000	> 200	< 10
Bank of England	Money, lending, credit, interest rates, etc.	> 4000	> 100	< 10



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Re-thinking unemployment risk

A very simple schema for distinguishing unemployment that poses a high risk of credit delinquency.





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Re-thinking unemployment risk

- What are the labour market states or transitions most relevant to credit risk?
- Can we define employment metrics more relevant to credit risk?
 - ▶ Avoid narrowness of ILO or claimant count definitions to include other 'painful' transitions (e.g. into 'underemployment', involuntary inactivity or lower status/occupation/pay employment)
 - ▶ Avoid breadth of ILO / claimant count stock rates to focus on key transitions imposing stress on borrower population(s)
- Can such measures be compiled into consistent data (including time series)?
- Are there consistently reliable proxies for such direct measures in aggregated series? – What are these? What are the best transformations?
- Can such measures be forecast / stressed in relation to macroeconomic assumptions?

Need more theory & direct evidence on situational factors driving credit outcomes

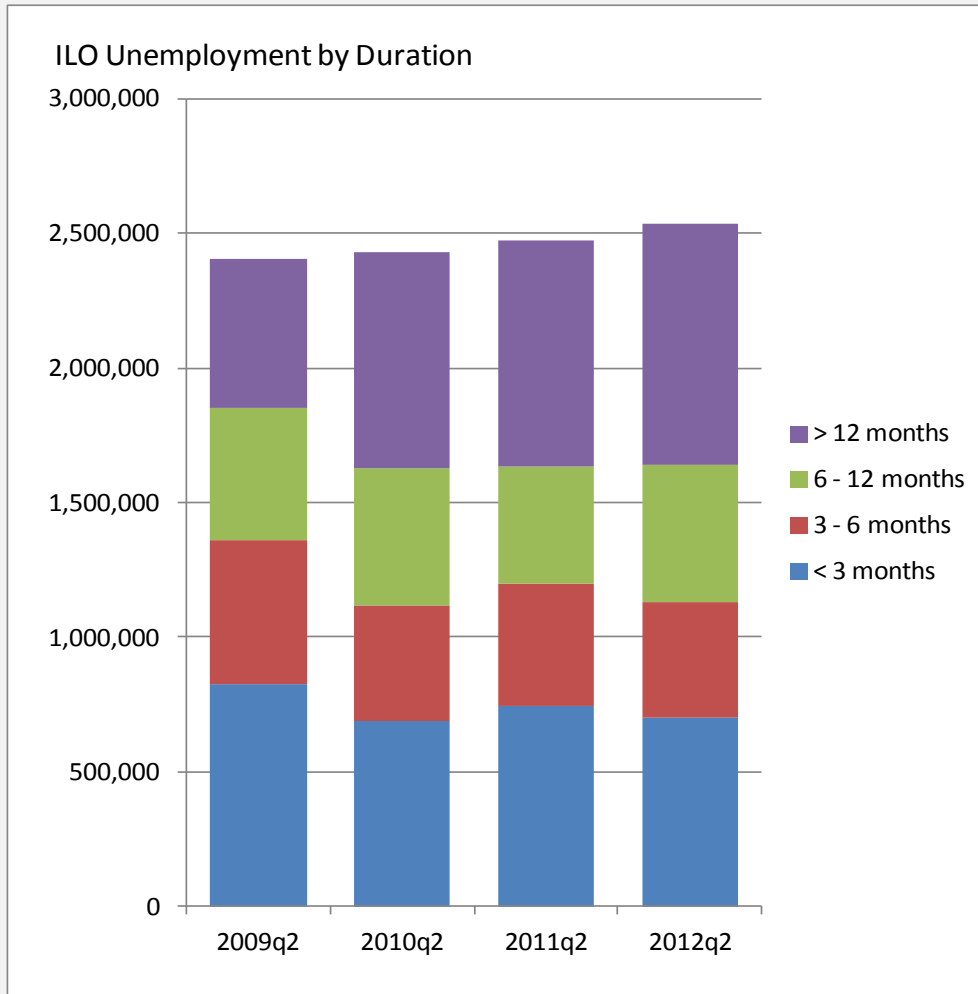
Relevant states or transitions may vary across borrowers / lenders / products

Need to link understanding of 'direct' risk factors to macroeconomic forecasts/scenarios



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Re-thinking unemployment risk



Source: Experian; ONS Labour Market Survey

- Most unemployment people have been unemployed for some time.
- Which states / transitions are most relevant to credit losses?
 - ▶ Being unemployed?
 - ▶ Becoming unemployed?
 - ▶ Becoming unemployed for more than a short period (e.g. > 3 months?)



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Re-thinking unemployment risk

ILO Unemployment < 3 months by Age



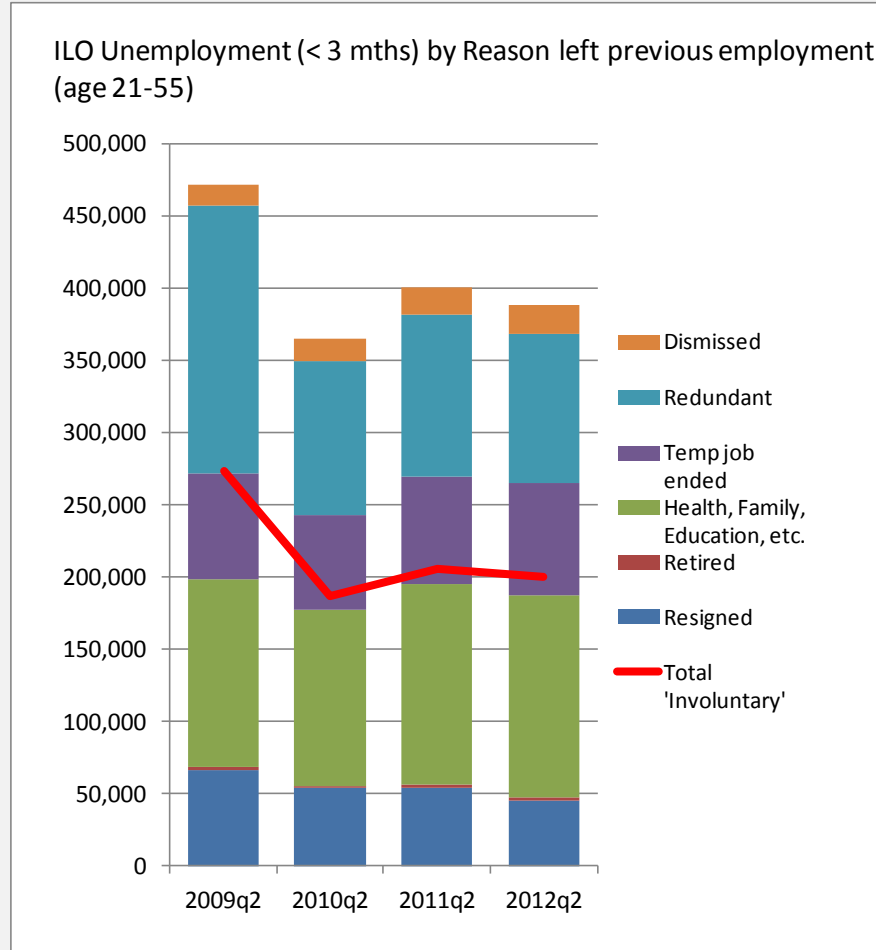
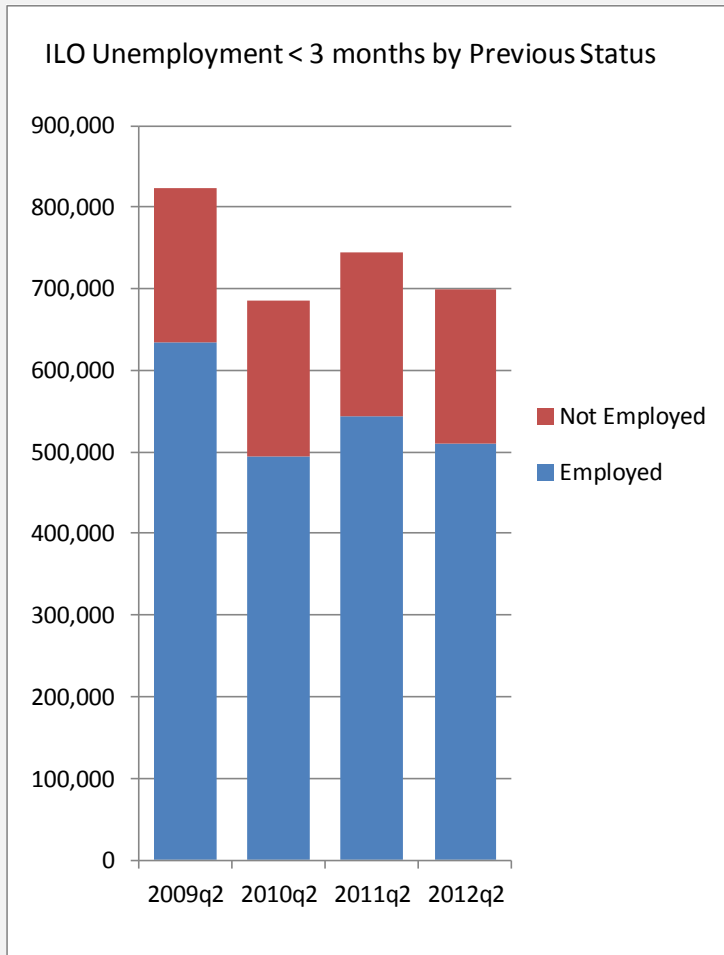
Shorter period (relatively 'new') unemployment has been declining – including among the core 'credit active' age cohorts despite growing total unemployment.

Source: Experian; ONS Labour Market Survey



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Re-thinking unemployment risk



Source: Experian; ONS Labour Market Survey

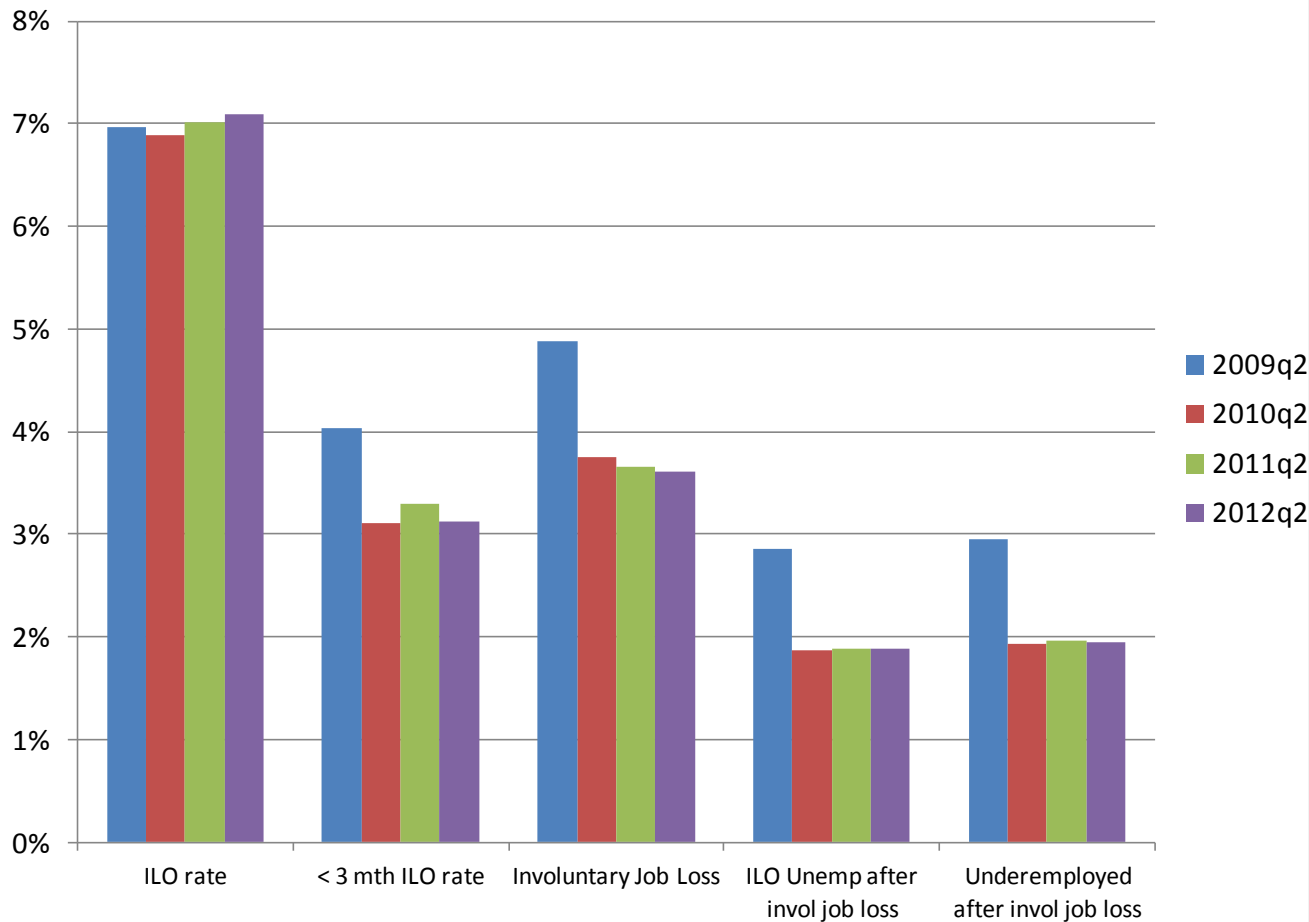
Many of the 'newly' unemployed were not previously employed (e.g. Students) or voluntarily left their previous jobs.



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Re-thinking unemployment risk

Alternative risk metrics for active aged 20-55



Is the headline (ILO or claimant count) unemployment rate the 'right' variable?

Available data allows for more subtle measures of employment risk that may not correlate highly with headline unemployment rate and that appear to match better to recent credit loss trends.

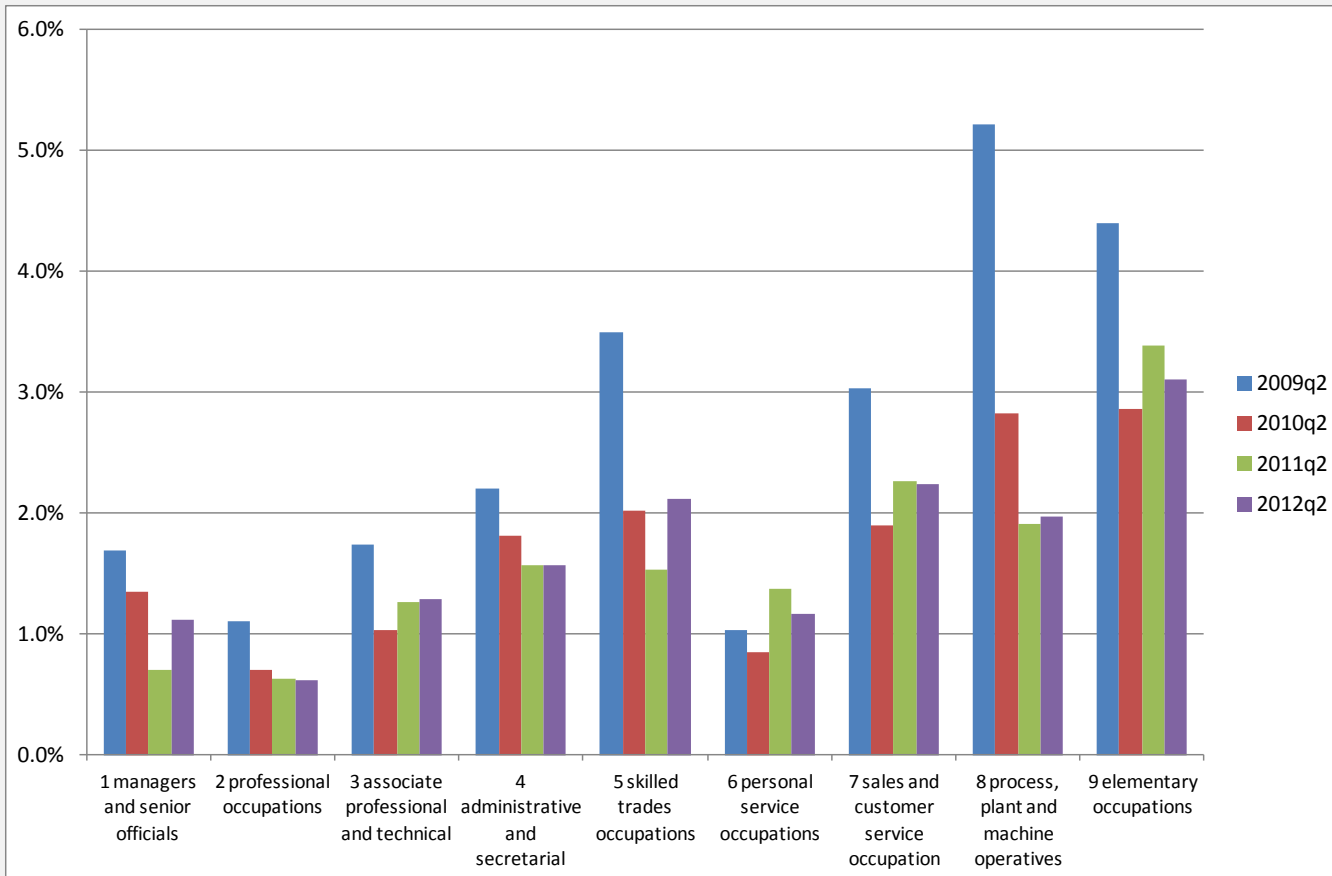
Source: Experian; ONS Labour Market Survey



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Re-thinking unemployment risk

Estimated probability of suffering underemployment due to involuntary job loss by previous occupation



Key labour market status transitions vary substantially and persistently based on identifiable individual characteristics.

Can we do better than aggregated rates as predictors of credit outcomes?

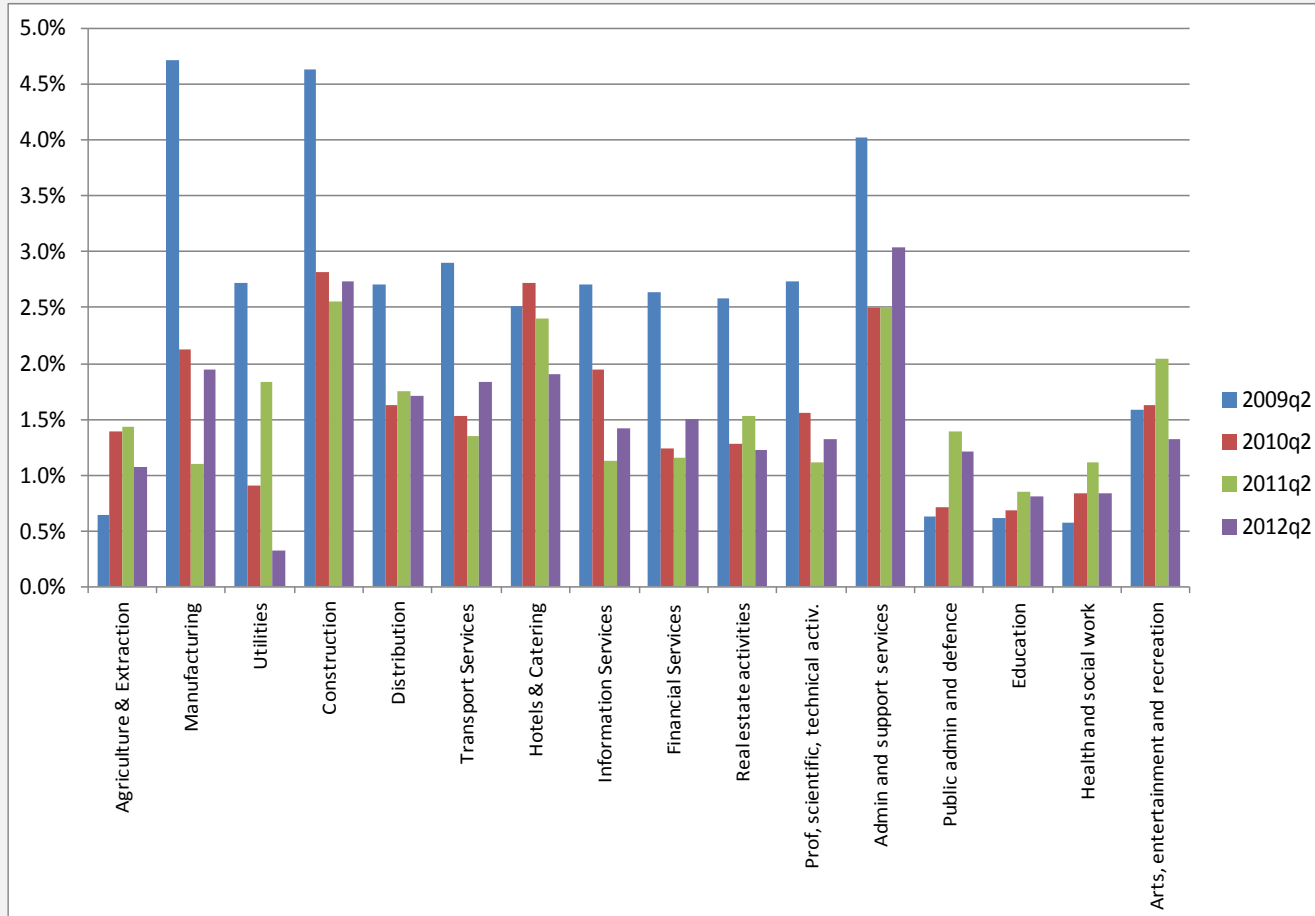
Source: Experian; ONS Labour Market Survey



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Re-thinking unemployment risk

Estimated probability of suffering underemployment due to involuntary job loss by previous industry sector



Key labour market status transitions vary substantially and persistently based on identifiable individual characteristics.

Can we do better than aggregated rates as predictors of credit outcomes?

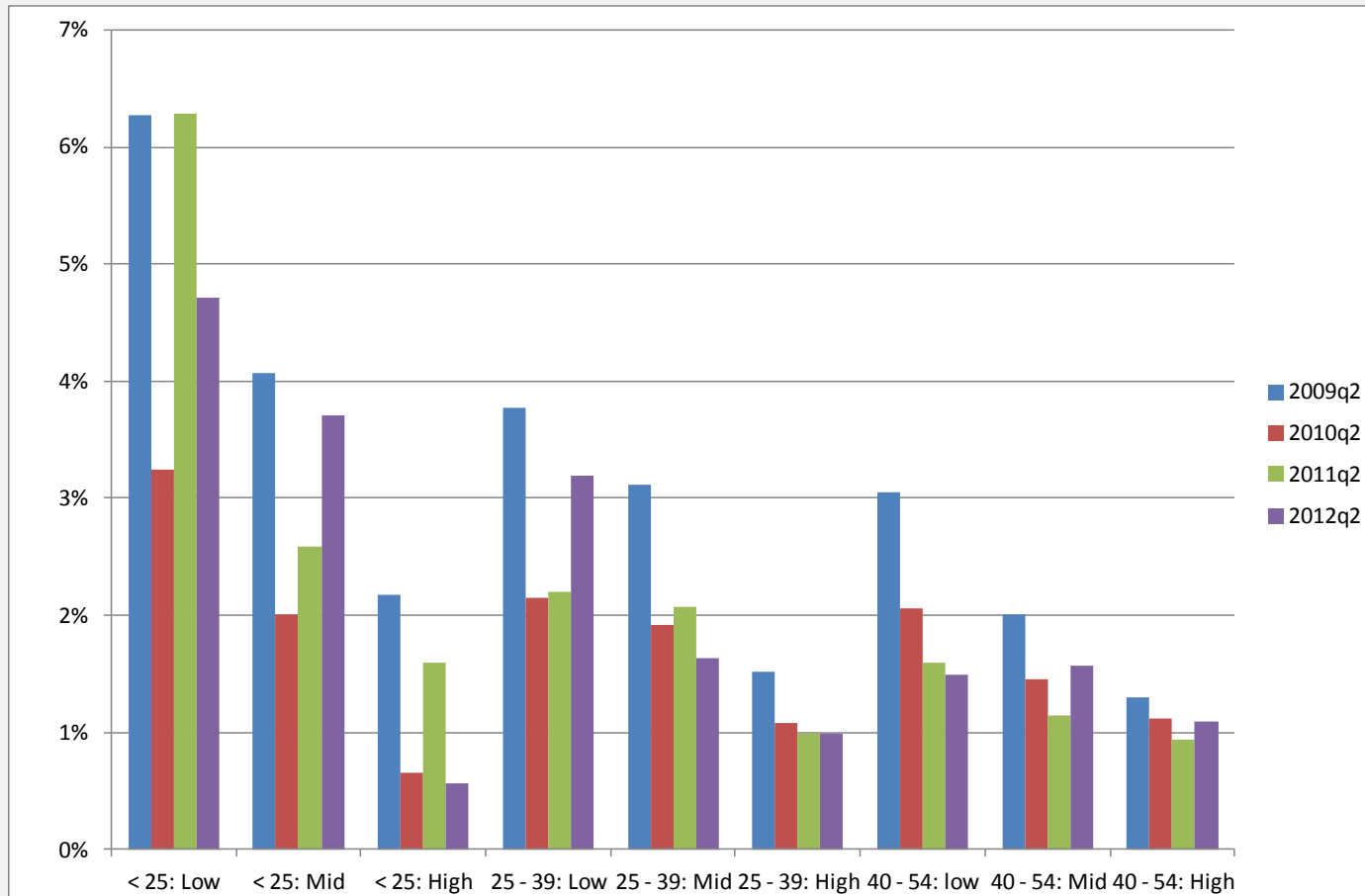
Source: Experian; ONS Labour Market Survey



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Re-thinking unemployment risk

Estimated probability of suffering underemployment due to involuntary job loss by age & highest qualification



Key labour market status transitions vary substantially and persistently based on identifiable individual characteristics.

Can we do better than aggregated rates as predictors of credit outcomes?

Source: Experian; ONS Labour Market Survey



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Re-thinking unemployment risk

	ILO Unemployment		Made Redundant		Involuntarily left paid job		Involuntarily left paid job, still underemployed	
	Chi2	pr > Chi2	Chi2	pr > Chi2	Chi2	pr > Chi2	Chi2	pr > Chi2
Gender	123.7	0.000	7.18	0.007	16.55	0.000	64.87	0.000
Region	422.34	0.000	29.98	0.003	74.00	0.000	86.76	0.000
Age & Qualifications	8845.74	0.000	16.61	0.120	319.25	0.000	221.55	0.000
Occupation			6605.85	0.000	1684.93	0.000	1192.40	0.000
Industry			300.90	0.000	3947.82	0.000	1114.10	0.000
Employment Status			69.88	0.000	131.29	0.000	171.98	0.000
Pseudo R-Squared		0.0862		0.0355		0.0351		0.0566
AUROC		0.7129		0.6827		0.6526		0.7016
Gini		0.4258		0.3654		0.3052		0.4032

Key labour market status transitions are not purely random but are predictable given basic individual characteristics.

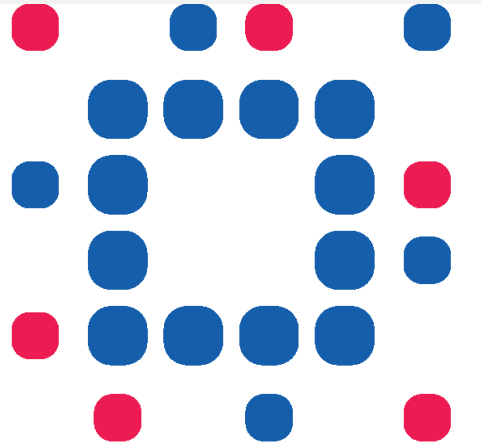
Can we do better than aggregated rates as predictors of credit outcomes?



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Conclusions

- There is a need reliably to link credit outcomes to economic conditions for loss forecasting, stress testing (and many other operational & strategic uses)
- This raises big challenges for model specification and selection of economic variables – given limited information available for estimating models and the statistical characteristics of candidate economic variables.
- Current approaches tend to emphasize a small set of macroeconomic factors (or functions of those factors) that correlated with historical trends in credit outcomes – but some of those relationships appear to be unstable and/or to have broken down in more recent history.
- Similar to an early-stage epidemiological study? – we can find correlations but we need to validate their robustness and to understand the mechanisms involved before we hang too much on the results
- Is it time to rethink this problem - focusing on identifying & understanding proximate economic drivers of default/delinquency and firmly linking those to reliably measurable proxies?
 - ▶ Dig deeper into the economic data.
 - ▶ Exploit heterogeneity in model estimation and loss forecasting.



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