
Comments on “Modelling the
Distribution of Credit Losses with
Observable and Latent Factors” by G.
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Summary

- Develop a model to estimate the credit loss distribution of the loans portfolio in the banking sector
- Consider both personal and business loans, disaggregated into multiple sectors
- Model default frequencies, individual exposures at default, losses given default and total loans in each sector
- Use (observable) macro factors and (unobservable) common factors

Summary (cont'd)

- Analyze virtually every loan made by Spanish banks from 1984 to 2006.
- Find that credit losses mostly originate in manufacturing, construction, personal loans and mortgages
- Stress tests reveal that GDP shocks are more serious than interest rate shocks

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- Observation #1: All series follow similar pattern; no obvious outlier.
 - Observation #2: Sample characterized by 3 regimes: 85-92; 93-96; 97-06.

Daily Debit Card Transactions

- Equation used to model changes in default frequencies:

$$\Delta y_{kt} = \alpha_{2,k} + \sum_{j=1}^q \rho_{2,j} \Delta y_{kt-j} + \sum_{j=1}^r \gamma'_{2,j} x_{t-j} + \beta_{2,k} f_{2,t} + u_{2,kt}. \quad (4)$$

▪Focusing on Mining and Utilities:

Table 1
 Model for default frequencies with GDP, interest rates and latent factors
 (a) Explanatory variables

	GDP_{t-2}	GDP_{t-3}	GDP_{t-4}	INT_{t-2}	INT_{t-3}	INT_{t-4}	f_{2t}
Agriculture	-1.133**	-1.129**	-0.432	-0.281	1.453**	-0.336	3.335**
→ Mining	-1.162	-1.248	0.122	0.291	0.316	-1.094	5.791**
Manufacture	-1.515**	-1.740**	-0.862*	0.383	0.668	-0.469	4.447**
→ Utilities	-0.097	0.087	-0.494	0.073	0.647	-0.847	5.129**
Construction	-0.958**	-0.988*	-0.875**	0.702	0.093	0.259	3.411**
Commerce	-1.267**	-1.213**	-0.606	-0.198	0.712	-0.119	4.038**
Hotels	-1.304**	-0.826	-0.141	-0.101	1.849**	-0.348	4.038**
Communications	-0.953**	-1.053**	-0.857*	0.138	1.125**	-0.435	3.673**
R&D	-0.403	-1.421**	-1.486**	0.156	-0.187	-0.096	3.697**
Other Corp.	-0.331	-0.888*	-0.256	0.644	0.881*	-0.242	3.191**
Cons. loans	-0.840**	-1.026**	-0.526	0.020	0.604	0.219	3.261**
Mortgages	-0.805	-1.608**	-1.329**	0.364	0.022	0.029	1.668**

Table 4
 Model for default frequencies with GDP and interest rates
 (a) Explanatory variables

	GDP_{t-2}	GDP_{t-3}	GDP_{t-4}	INT_{t-2}	INT_{t-3}	INT_{t-4}	f_{1t}
Agriculture	-1.058**	-1.105**	-0.326	-0.096	1.349**	-0.067	0.000
→ Mining	-0.984	-1.171	0.205	0.685	0.251	-0.949	0.000
Manufacture	-1.509**	-1.613**	-0.686	0.646	0.681	-0.430	0.000
→ Utilities	-0.076	0.071	-0.394	0.451	0.390	-0.491	0.000
Construction	-0.783*	-0.712	-0.770*	1.190**	-0.308	0.593	0.000
Commerce	-1.203**	-1.029**	-0.431	0.069	0.702	-0.073	0.000
Hotels	-1.273**	-0.688	-0.017	0.155	1.714**	-0.156	0.000
Communications	-0.745*	-0.800	-0.652	0.567	0.999*	-0.218	0.000
R&D	-0.207	-1.364**	-1.454**	0.412	-0.428	0.178	0.000
Other Corp.	-0.290	-0.840*	-0.192	0.736	0.766	-0.013	0.000
Cons. loans	-0.650*	-0.893**	-0.418	0.308	0.472	0.452	0.000
Mortgages	-0.825	-1.654**	-1.440**	0.530	-0.224	0.103	0.000

Model with latent factors, GDP, interest rates, spread and six sectorial effects

(a) Default frequencies

	GDP_{t-2}	GDP_{t-3}	GDP_{t-4}	INT_{t-2}	INT_{t-3}	INT_{t-4}	SPR_{t-2}	SPR_{t-3}	SPR_{t-4}	SEC_{t-2}	SEC_{t-3}	SEC_{t-4}	f_{2t}
Agriculture	-0.927**	-1.098**	-0.473	0.597	0.316	0.421	0.672	-1.025	0.731	0.038	0.035	-0.036	3.320**
Mining	-0.882	-0.843	0.647	0.835	-0.969	-1.407	0.935	-2.019	-0.436	0.004	-0.551	-0.586*	5.121**
Manufacture	-1.353**	-1.458**	-0.593	0.652	0.008	-0.931	0.267	-1.169	-0.932	-0.125	-0.208*	-0.185*	4.029**
Utilities	-0.408	0.406	-0.712	-1.536	2.411	-3.211**	-1.191	1.235	-2.566**	-0.142	0.191	-0.313	4.918**
Construction	-0.794*	-0.533	-0.852*	0.760	0.351	-0.345	0.262	0.159	-0.778	-0.192*	-0.003	-0.075	3.160**
Commerce	-1.161**	-1.199**	-0.904**	0.315	-0.032	-0.155	0.656	-0.854	-0.165	-0.089	0.445*	0.073	3.856**
Hotels	-1.208**	-0.506	-0.331	0.233	1.824*	-0.063	0.054	0.047	0.374	-0.694	0.247	0.393	4.122**
Communications	-0.824*	-1.132**	-1.130**	1.183	-0.156	0.168	1.049	-1.114	0.569	-0.023	0.335	0.275	3.665**
R&D	-0.460	-1.289**	-1.329**	-0.818	0.685	-0.666	-1.248	0.630	-0.791	-	-	-	3.632**
Other Corp.	-0.317	-0.877*	-0.181	0.029	1.134	0.140	-1.277*	0.120	0.265	-	-	-	3.270**
Cons. loans	-0.857**	-1.001**	-0.573	0.172	0.756	-0.292	0.472	0.180	-0.572	0.021	0.216	-0.580	3.193**
Mortgages	-0.882	-1.753**	-1.506**	1.781*	0.094	-0.694	2.734**	0.143	-0.509	-0.911	-0.347	0.166	1.860**

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- Observation #3: Mining and Utilities are not well explained by GDP and real interest rate.

Comments/Questions

1. Some sectors may not be well explained by domestic macro variables; have you considered some international variables (e.g. commodity prices, exchange rates, etc.) in your \mathbf{x} vector?
2. Following Observation #2, do we know if the estimated parameters are stable?
3. Is securitization an issue?