Data Science & Analytics: A New Skillset for Digitalised World and Big Data Era

The EPF Experience

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Introducing EPF

- Established 1951, one of the oldest provident funds in the world

- Mandatory contributions from wages (11% employees, 13% employers)

- >14 million members, ©7 million active members or roughly half the working population

- Assets under management of >USD200 billion

- 4th largest pension fund in Asia, 7th largest in the world

- Investments in >40 countries, across multiple asset classes

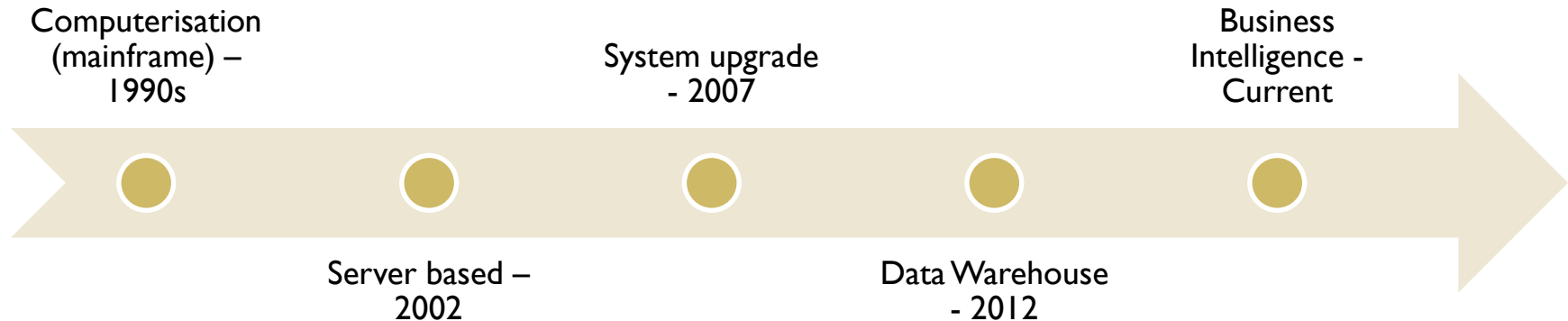- 5600 staff, including >300 investment professionals

Introducing EPF

- Powerful potential in EPF administrative data:
  - Income
  - Wealth
  - Employment
  - Labour turnover
  - Inequality (gender, age)
  - Intergenerational Mobility
  - Industry Sector

Where are we?

- Still early stages

Computerisation (mainframe) – 1990s

Server based – 2002

System upgrade - 2007

Data Warehouse - 2012
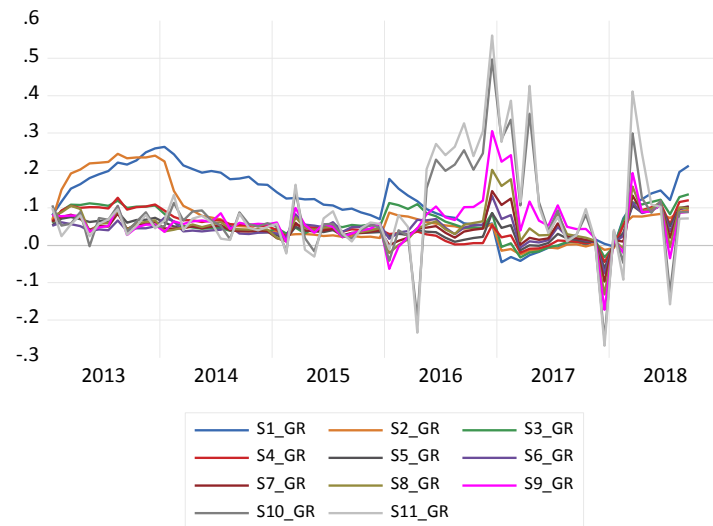
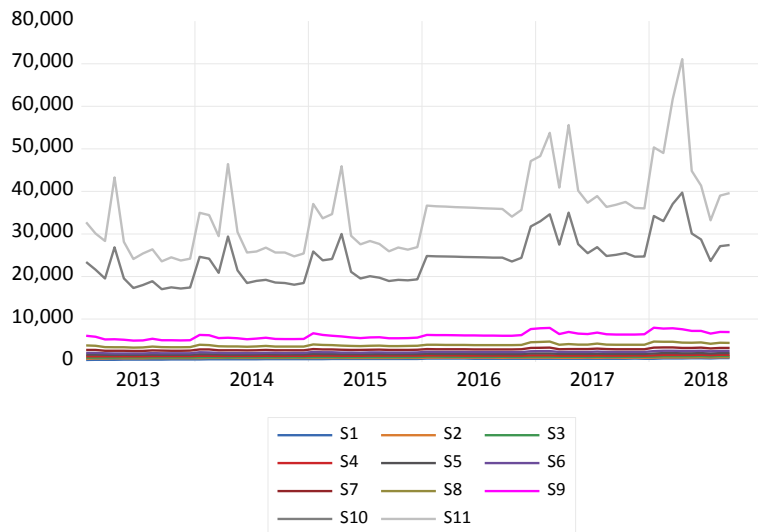Business Intelligence - Current

Key Issues

- Systems
- Architecture
- Culture & Mindset
- Skills
- Governance
- User requirements
- Data quality

Data capture and storage geared towards **operational requirements**, not analytics
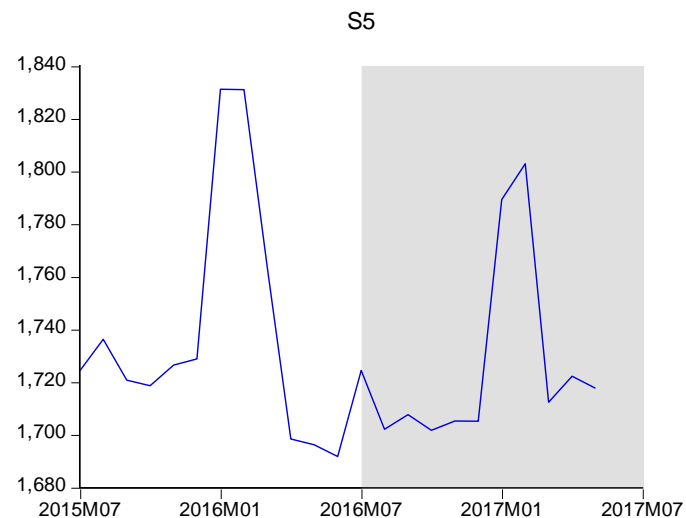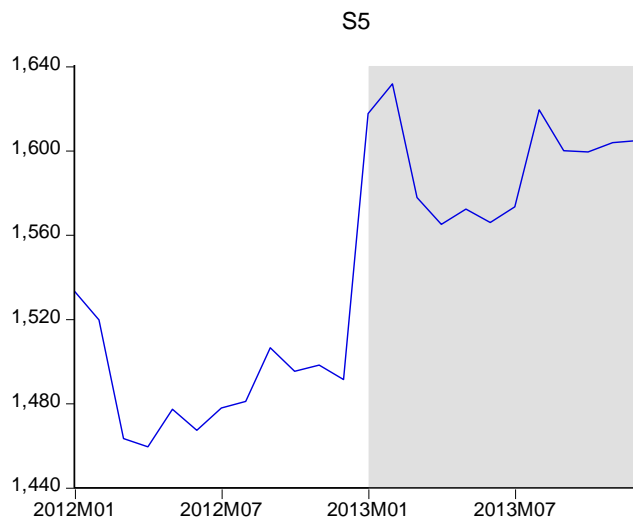
Baby steps

Wage levels and growth

Baby steps

Minimum wage impact

Baby steps

Inequality (Gini coefficient)

Baby steps

Income mobility

	>10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100		90-95	95-99	99-100
>10	24.5%	17.1%	15.2%	13.7%	9.8%	7.4%	5.4%	4.1%	2.4%	0.2%		0.3%	0.2%	0.0%
10-20	10.8%	10.2%	8.6%	11.4%	11.2%	10.6%	10.4%	11.3%	11.3%	4.1%		6.7%	1.8%	0.7%
20-30	11.5%	10.3%	9.6%	8.8%	9.1%	8.6%	9.6%	11.2%	10.2%	11.1%		11.3%	11.4%	8.6%
30-40	21.5%	20.0%	14.2%	10.3%	8.2%	6.2%	5.5%	5.3%	4.1%	4.7%		3.8%	5.0%	7.9%
40-50	13.2%	22.3%	23.0%	16.1%	9.8%	6.5%	3.6%	3.1%	1.6%	0.9%		0.7%	1.0%	1.0%
50-60	7.1%	9.5%	15.1%	19.3%	20.1%	14.0%	8.1%	3.6%	2.0%	1.2%		1.1%	1.1%	2.0%
60-70	4.7%	5.7%	7.9%	11.1%	16.6%	20.4%	18.5%	10.1%	3.5%	1.6%		2.1%	1.1%	1.0%
70-80	3.3%	2.8%	3.8%	6.2%	10.2%	15.8%	22.3%	19.6%	12.8%	3.2%		4.6%	1.7%	2.3%
80-90	2.4%	1.6%	1.9%	2.4%	4.0%	8.1%	12.6%	23.0%	29.1%	15.0%		22.3%	8.5%	4.3%
90-100	1.0%	0.4%	0.6%	0.7%	1.1%	2.4%	4.0%	8.7%	23.0%	58.1%		47.1%	68.3%	72.2%
90-95	0.8%	0.3%	0.4%	0.4%	0.9%	1.7%	2.5%	5.3%	14.8%	22.9%		27.2%	22.3%	4.0%
95-99	0.2%	0.2%	0.1%	0.3%	0.2%	0.6%	1.3%	3.1%	7.1%	26.9%		16.8%	37.4%	35.8%
99-100	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.3%	0.3%	1.1%	8.2%		3.1%	8.6%	32.5%

2012

Current and Future Projects

- Forecasting operational variables (contributions and withdrawals) for asset liability management

- Predicting employer defaults (enforcement)

- Labour turnover and employment (large and small companies)

- Understanding withdrawal behaviour (tie-in with macro and household variables)

- Wage dynamics (large versus small companies)

- Intra-company inequality

Analytics & Digital Transformation

- Data cleansing
- Data capture
- Data competencies
- Data governance
- Data culture

EPF Digital Transformation

The EPF digital platform
- Employer services
- Member services
- Robo-advisory
- AI
- Marketing organisation

Collaboration

- Exponential potential of data sharing
  - Household balance sheets
  - Real time tracking of the economy
  - Social welfare services
  - Healthcare services
- Hard issues to overcome however:
  - Regulatory and legal hurdles (PDPA)
  - Security and integrity

Final thoughts

- Need for greater data literacy
  - Math and stats
  - Evidence based decision making
- Need for cross-disciplinary competencies
  - Technical expertise + user knowledge
  - Curiosity

Q&A

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