UTC2720 PROJECT REPORT

Collectively Done By:

Jackson Lian | Joshua Seetoh Dewei | Wong Hui Wen

Table of Contents

[Norway 2](#_Toc15296997)

[Pre-tax Inequality Analysis: 2](#_Toc15296998)

[Post-tax Inequality Analysis: 4](#_Toc15296999)

[Policy Analysis: 4](#_Toc15297000)

[Wage Policy 4](#_Toc15297001)

[Gender Gap & Racial Discriminations 5](#_Toc15297002)

[USA 6](#_Toc15297003)

[Pre-tax Inequality Analysis: 6](#_Toc15297004)

[Post-tax Inequality Analysis: 7](#_Toc15297005)

[Cross-Country Policy Analysis: 8](#_Toc15297006)

[Healthcare 8](#_Toc15297007)

[Education 8](#_Toc15297008)

[Agent-Based Modelling 9](#_Toc15297009)

[SINGAPORE 10](#_Toc15297010)

[Data Analysis: 10](#_Toc15297011)

[Trend Analysis: 11](#_Toc15297012)

[Policy Analysis: 11](#_Toc15297013)

[Financial Reforms 11](#_Toc15297014)

[The Tax Regime and Irreconcilable Findings 12](#_Toc15297015)

[Dignity, Ideology and Social Inequality 12](#_Toc15297016)

[MALAYSIA 13](#_Toc15297017)

[General Analysis 13](#_Toc15297018)

[FRANCE 14](#_Toc15297019)

[General Analysis: 14](#_Toc15297020)

[cONCLUSION 15](#_Toc15297021)

[References 15](#_Toc15297022)

[aNNEX: sPECIFIC Methodology used 17](#_Toc15297023)

**NORWAY**

## Pre-tax Inequality Analysis:

Norway performs well for its bottom 99% of income earners, hovering very close to the ideal inequality benchmarked at 0.00% (horizontal x-axis) from 1980-2016. This is significant as the data has not accounted for the effect of taxation. However, for the top 1%, the deviation from ideal inequality is consistently and largely above its ideal inequality – peaking at +300% in 2005.

## Post-tax Inequality Analysis:

For the top 1%, post-tax data shows mixed results depending on the time frame in question, with productive redistribution towards ideal inequality from 1988 – 1994 and 2005 – 2016, and worsening redistribution away from ideal inequality from 1994 – 2005.

For the top 10-1%, post-tax data consistently deviates away from its ideal distribution. Comparatively, the pre-tax data for this group regularly hits ideal inequality – 1997, 2000, 2005-2007. Despite the global praise of Scandinavian’s tax policies, both sets of data seem to collectively show that it has counterproductive effects on the top 10-1%.

For the bottom 90%, however, taxation has negligible effect on the fairness of their distribution given the convergence of both pre- and post-tax data.

## Policy Analysis:

From the data-analyses, it can be seen that the tax policies in Norway may not be the strength of its income distribution system. Indeed, for the top 1% and 10-1%, the tax policies are either counter-productive or inconsistent in increasing fairness.

Regardless, Norway’s natural distribution without taxation is already impressive by itself for the bottom 99% given no tax intervention. Assuming that taxation is not a significant contributor to Norway’s impressive degree of fairness in its income distribution, what are the other policies that help to achieve such pre-tax performance?

### 

### Wage Policy

There are two features of Norway’s wage policies that are worth mentioning: Industry-based wage floors and trade unions.

Consistent with Rawlsian Maximin principle, wage floors are implemented. However, the wage floor in Norway is industry-specific, not statutory. This gives the industries flexibility to prioritise industries and adjust according to industrial needs without constraining itself to searching for a non-existent, one-size-fit-all wage-floor.

Additionally, more than half of Norway’s workers are in trade unions, thus accounting for and reducing the power imbalance that naturally exists between employers and employees in favour of the former. Ultimately, strong unions prevent workers who are in the bottom 90% from being excessively exploited and be given unfair wages in favour of the profits of the top 10%.

### Gender Gap & Racial Discriminations

One potential confounder of inequality that is consistently being disregarded by inequality pundits are gender gaps and racial discriminations. Power and social dynamics are the distorting factors that deviate markets from ideal free market conditions. Power is also not only concentrated in the hands of the rich and politically powerful. As Michel Foucault famously proclaimed, power is everywhere (Foucault & Gordon, 1980). For instance, a human resource recruiter may cast his / her anti-black and patriarchal biases on the employment opportunity and pay package of a black female applicant. Even after being accepted into the company, she may face the same kinds of discrimination and be denied opportunities at every turn of the way due to the culture of that company. Of course, it is unwise to assume that any company can be made completely out of misogynistic and racist individuals. The point that this example serves to make is that gender gaps and racial discriminations are factors that can distort and prevent income distribution from maximising fairness through free market forces. For the case of Norway, due to its largely homogenous ethnic composition (83.2% Norwegian, 8.3% European) and being ranked 3rd in the Global Gender Gap Index (World Economic Forum, 2016), the lack of gender gap and racial discriminations may be the key to Norway’s achievement of free market conditions and impressive pre-tax performance for the bottom 99%.

# USA

## Pre-tax Inequality Analysis:

In general, USA’s performance consistently worsened since the 1980s – where top 1% incomes grew exponentially, top 10-1% overcompensated, and bottom 90% worsened to approximately -25% in 2014. Nonetheless, USA had a goldilocks moment in the 70s where the overall performance of all three groups were at its best within this timeframe of 1962 – 2014.

## Post-tax Inequality Analysis:

For the top 1%, the effect of the tax policy is impressive – performing even better than Norway. The approximate difference between pre- and post-tax is an average of 50%. In essence, the tax policies generally bring the top percentile 50% closer to ideal inequality.

For the top 10-1%, it depends on the time frame. In the 60s and 70s, taxation has worsened the distribution’s fairness, bringing it further from the ideal inequality. In the 80s, the pre-tax distribution has already reached ideal distribution, but taxation deviated the distribution and undercompensates this group. From the 90s onward, taxation has neither improves nor disproves fairness for this group as both pre- and post-tax distribution hovers at about the same deviation in absolute numbers from ideal distribution.

For the bottom 90%, in general, the effect of taxation on this group is positive as this group has constantly been undercompensated in our time frame.

## Cross-Country Policy Analysis:

Comparing Norway and USA’s post-tax deviation from ideal inequality, it is not conclusive as to which country is faring better. Using contextual knowledge about both countries, however, we would argue that Norway is faring better. Although there is a spike of top 1% data for Norway in 2005 to over 300%, it is a one-off trigger and it dropped down to about 125% thereafter in 2006 and further down to about 75% in 2015 (post-tax). Whereas for the USA, the increment is a substantial climb from 25% in 1974 to 160% in 2014 (post-tax). This substantial climb is indicative of systemic and cultural issues that gradually evolved and become entrenched in America. Indeed, as highlighted in Venkatasubramanian’s book ‘*How Much Inequality is Fair? Mathematical Principles of a Moral, Optimal, and Stable Capitalist Society’* (2017), the causes for USA’s unfair top percentile pay could be a mix of managerial power / corporate misgovernance, a winner-take-all culture, CEO worship and the weakening of the unions (compared to strong union participation in Norway). We would also add that compared to Norway, America is also more significantly plagued by the twin evils of gender gaps and racial discriminations. Moreover, the data also does not account for the social security systems in both countries – which should not be discounted when analysing inequality in totality.

### Healthcare

With an insurance-based, privatised healthcare system, nearly a tenth of the American population are uninsured in 2016 (Khazan, 2018). In contrast, Norway has a universal healthcare system largely funded by taxation. The outcome of the US system is that income inequality has been brought over its healthcare system – which treats everyone as customers, not citizens. Meanwhile, Norway’s system taxes everyone and redistribute the income in the form of services to everyone equally.

### Education

Similar to its healthcare system, America’s private-public school system also perpetuates income inequality, with the richer ones being able to afford better, private schools (Semuels, 2016). Expectedly, Norway’s publicly-funded education treats everyone’s equally and allow everyone to be educated regardless of income level, thereby providing relatively equal opportunities.

Hence, what the data here does not reflect is redistribution in the form of services such as healthcare and education. Indeed, resolving the issue of inequality goes beyond taxation, and interventions are often required to curtail the perils of free-market forces that naturally grow income inequality into social inequality. There might be a fair distribution of income inequality, but it would be a hard sell to insist the same for social inequality – commodifying human lives is immoral and the perpetuation of inequality in education produces unequal opportunity, thereby distorting the free market condition.

## Agent-Based Modelling

A screenshot of a social media post

Description automatically generated

After running a one-class Agent-Based Modelling (ABM) of the US pre-tax distribution, the trend for all income groups between ABM and our empirical data generally follow the same trend in terms of directions – top 1% on an upward trend away from ideal inequality; top 10-1% hovering above and below ideal inequality but on an upward trend; bottom 90% on a downward trend away from ideal inequality.

A screenshot of a cell phone

Description automatically generated

After running a one-class Agent-Based Modelling (ABM) of the US post-tax distribution, the trends for all income groups between ABM and our empirical data are mixed. For the top 1%, empirical shows an upward trend while ABM derives a downward trend. For the top 10-1%, both empirical and ABM data follows a downward trend away from ideal inequality, with ABM results fluctuating towards ideal inequality more frequently. For the bottom 90%, ABM data shows an upward trend while empirical data shows a downward trend away from ideal inequality.

A close up of a map

Description automatically generated

A close up of a map

Description automatically generated

In terms of the quantitative difference between ABM and our empirical data, the deviation all falls below 10%. This means that the ABM results are generally consistent with the empirical data.

# SINGAPORE

## Data Analysis:

Singapore’s pre-tax data is highly impressive, with the top 1% significantly outperforming even Norway, and the deviation of bottom 99% from ideal inequality being negligibly poorer than Norway. It is a shame that we do not have the post-data, preventing us from analysing the effects of the tax regime in Singapore.

## 

## Trend Analysis:

For the top 1%, its deviation hovers between 20% and 40% from 1974 till 1998. From 1998 onward, it rose to an unstable equilibrium between 60% and 80% from 2002 till 2014.

For the top 10-1%, the group is the most undercompensated group, oscillating between -30% and -20% from ideal inequality from 1974 till 2000. It then improved to a near-ideal level from 2002 till 2016.

For the bottom 90%, the group is overcompensated by approximate 10% from 1974 till 1998, dropping down to -10% between 1998 till 2014 – the same period when the top 1% saw a spike in being overcompensated.

## Policy Analysis:

### Financial Reforms

The timeframe used (1974 – 2014) can be dissected into two periods: pre-financial reform and post-financial reforms’ periods – before and after 1998 respectively. After the Asian Financial Crisis (AFC) in 1997, the Singapore government embarked on financial reforms, liberalising the financial market to reduce dependency on other Asian markets (Ngiam, 2001) and eventually turned Singapore into the 4th most attractive Global Financial Centre today (Szmigiera, 2019).

Becoming a major centre of finance has significant implication on income inequality. With Singapore specialising in wealth management, transaction and accumulation, much of the market resources are dedicated to the wasteful yet lucrative activities of trading (Turbeville, 2015). Income opportunities therefore grew for the rich, and due to the economic fact of limited resources, this development consequently crowds out income opportunities for the working class (Brei, Ferri, & Gambacorta, 2019). With this development as the trigger, it creates a feedback loop as wealth begets more wealth (due to how assets function). Moreover, in the context of Singapore’s neoliberal and pro-business economic policies (low corporate tax) coupled with the absence of real trade unions in Singapore, the workers face depressed and stagnant wages while the top 1% continues to become richer.

The trend difference before and after 1998 is consistent with the analysis above – with the increasing overcompensation of the top 1% and the undercompensation of the bottom 90% in Singapore from 1998 onwards.

### The Tax Regime and Irreconcilable Findings

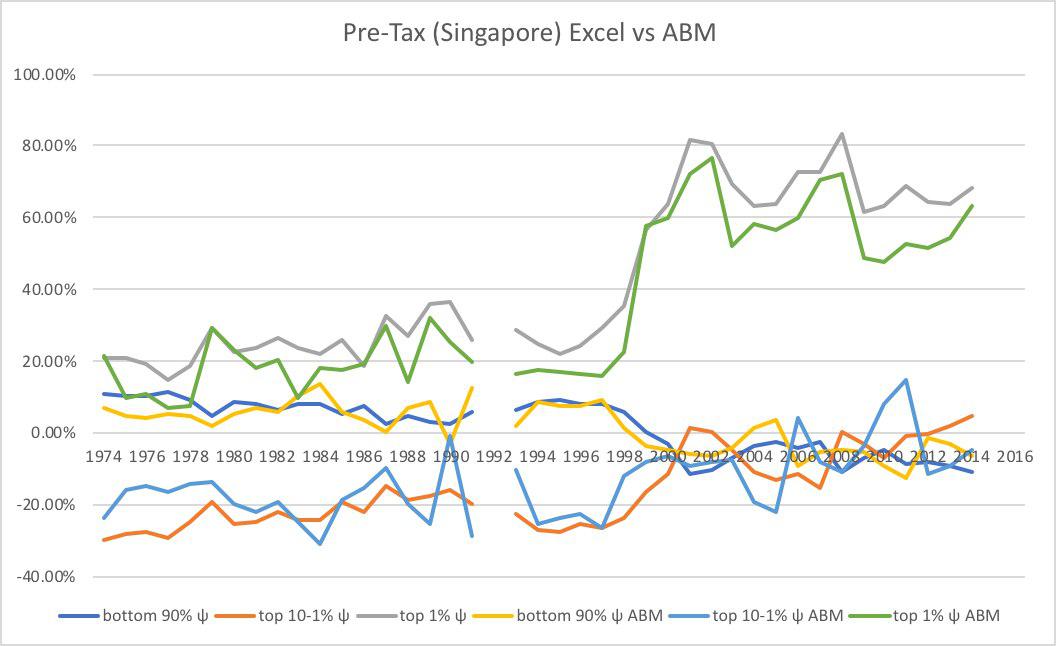
Even though the data has revealed that Singapore’s income distribution is fairer than even Norway, we are unable to reconcile this with our contextual knowledge. Singapore ranks as 149th out of 157th in Oxfam’s Commitment to Reducing Inequality (CRI) Index – which Singapore scores extremely poorly in the indicators for ‘harmful tax practices’, absence of minimum wage except for security guards and cleaners (Mokhtar, 2018). This is where it becomes problematic as we do not have post-tax data to confirm these findings. Nonetheless, as Singaporeans ourselves, we find the data unintuitive and irreconcilable as Singaporeans are generally unhappy with the income distribution (Wembridge, 2015). If the pre-tax data shows such impressive closeness to maximum fairness, why are Singaporeans so unhappy? The answer might be found in the qualitative discourse of inequality in Singapore.

### Dignity, Ideology and Social Inequality

Inequality has been popularised into our national discourse since the publish of *This is What Inequality Looks Like* (Teo, 2018). The book brings resonance to Singaporeans, as evident by its national bestseller’s status and extensive coverage by local media. The essence of inequality highlighted in her book does not lie in the numbers and figures, but in the lived experience of individuals. Distribution is not the main concern, it is about the indignity suffered by the low income in the ideological backdrop of meritocracy and aids that are sparingly granted with the assumption that the poor are out to abuse them. Difference in income level also spills into unequal treatment and opportunities in education and healthcare (Teo, 2018) – as similarly explained under the section that elucidates USA’s situation.

Indeed, there is one way to reconcile the data and public sentiments in Singapore: The feeling of unfairness does not merely derive itself from income inequality, but also social inequality – which is complicated by the multiple dimensions of dignity, status, ideology, and social capitals. Social inequalities, unfortunately, is also not reflected in the data.

## Agent-Based Modelling



After running a one-class Agent-Based Modelling (ABM) of Singapore’s pre-tax distribution, the trend for all income groups between ABM and our empirical data generally follow the same trend in terms of directions – top 1% on an upward trend away from ideal inequality; top 10-1% on an upward trend towards ideal inequality; bottom 90% on a downward trend – at first towards but later away from ideal inequality at the turn of the century.

A close up of a map

Description automatically generated

In terms of the quantitative difference between ABM and our empirical data, the deviation all falls below 5%. This means that the ABM results are generally consistent with the empirical data.

# MALAYSIA

## General Analysis

We have very limited data on Malaysia’s pre-tax (not to mention post-tax) data. From what limited data we have, however, it is observed that Malaysia’s top 1% has an overcompensating deviation of over 200% in 60 years. Ostensibly, this is due to the high level of rent-seeking, corruption, and crony capitalist practices that are prevalent and well-known in Malaysia’s political culture. From the Prime Minister (Najib), down to the street-level bureaucrat (police officers at Singapore-Malaysia customs[[1]](#footnote-1)), corruption is an enduring characteristics of Malaysia’s political culture.

All these factors eventually serve to distort the free market conditions, thereby creating such egregiously unideal overcompensation of the top 1%.

For the bottom 99% however, the limited amount of data is encouraging, perhaps due to the policy of uplifting the poor through affirmative action policies that favour the Bumiputera – specifically, the New Economic Policies in the 1970s.

Nonetheless, every facet of Malaysia’s policies is racialised – To list any company in the KL Stock Exchange, there needs to be a 30% Bumiputera ownership of the equity. A portion of university placings are also reserved for Bumiputera. Hence, despite the seemingly fair distribution for the bottom 99%, the income opportunities are highly unequal – which is another factor that the data omits and obscures.

# FRANCE

## General Analysis:

Similar to Singapore, France has two distinct periods in terms of data trend – pre- and post WWII. Before WWII, France’s distribution of income is highly unfair, with 900% above ideal compensation for top 1% at a deviation of +900%. For the top 10-1%, this group is also overcompensated by 100%. With the disaster of WWII inflicted upon France, the fairness of France’s distribution reaches its apex at 1945 when the deviations are the lowest. It then stabilised at an average of 300% for top 1%, 50% for top 10-1%, and surprisingly near-ideal compensation (also still undercompensated) for the bottom 90%.

The reason for such drastic difference between France’s pre- and post- war fairness in income distribution is likely due to the establishment of welfare and social security system in the aftermath of WWII. Nonetheless, the top 1% continues to be heavily compensated. Pundits have attributed this – once again – to the evil of wealth concentration just like Singapore (Alderman, 2018).

It is a shame that we do not have post-tax data for France as France is known to have a tax regime that generously redistributes – as The Economist claims – more from the rich to poor than Sweden (The Economist, 2019). Nevertheless, despite such claims, the recent Yellow Vest protest is indicative of a more complex and systemic problem that cannot be seen from the data alone – much like Singapore.

# CONCLUSION

Across all five countries, Singapore performs the best in terms of fair distribution using pre-tax data. Additionally, two common threats to unfair inequality that our analyses have identified are wealth concentration and weak trade unions. Amongst the two countries with post-tax data – Norway and the USA – on face value, USA seem to be doing better when it comes to using tax regime to correct inequality. However, contextual knowledge matters as the data only highlight the effect of taxation, but not other more qualitative and systemic policies that closes gender gaps and redistributes in terms of healthcare and education in Norway. Evidently, fairness cannot be confined to income as services received in the form of healthcare and education needs to be accounted for as well. Throughout the analyses of these countries, we consistently realised the limitation of the quantitative data alone as it omits factors such as social inequality, welfare benefits, gender gaps and racial discrimination. Focusing on the pre- and post-tax data alone for analysis has proven to be very limited. The Ideal Inequality Coefficient ought to be used as a core but not an independent tool when analysing fair income inequality. Nonetheless, it is indispensable in giving us quantitative benchmark and basis to analyse what is fair, thereby painting a more complete picture to better inform policy-making.

# References

Alderman, L. (2018, December 4). These 5 numbers explain why the french are in the streets. The New York Times. Retrieved from https://www.nytimes.com/2018/12/04/world/europe/france-economy-protests.html

Brei, M., Ferri, G., & Gambacorta, L. (2019, March 18). How finance affects income inequality -. Retrieved July 21, 2019, from https://promarket.org/how-finance-affects-income-inequality/

Foucault, M., & Gordon, C. (1980). Power/knowledge: Selected interviews and other writings, 1972-1977 (1st American ed). New York: Pantheon Books.

Khazan, O. (2018, June 22). The 3 reasons the u. S. Health-care system is the worst. Retrieved July 20, 2019, from The Atlantic website: https://www.theatlantic.com/health/archive/2018/06/the-3-reasons-the-us-healthcare-system-is-the-worst/563519/

Mokhtar, F. (2018, October 9). Singapore ranked among bottom 10 countries for efforts to reduce inequality: Oxfam report. Retrieved July 21, 2019, from TODAYonline website: https://www.todayonline.com/singapore/singapore-ranked-among-bottom-10-countries-efforts-reduce-inequality-oxfam-report

Ngiam, K. (2001). Singapore – Coping With The Asian Financial Crisis: The Singapore Experience. In From Crisis To Recovery East Asia Rising Again? (pp. 141–172). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.475.8642&rep=rep1&type=pdf

Semuels, A. (2016, August 25). Good school, rich school; bad school, poor school. Retrieved July 20, 2019, from The Atlantic website: https://www.theatlantic.com/business/archive/2016/08/property-taxes-and-unequal-schools/497333/

Singapore – Coping With The Asian Financial Crisis: The Singapore Experience. (n.d.).

Szmigiera, M. (2019, March). Leading global financial centers 2019. Retrieved July 21, 2019, from Statista website: https://www.statista.com/statistics/270228/top-financial-centers-on-the-global-financial-centres-index/

Teo, Y. Y. (2018). This is what inequality looks like. Singapore: Ethos Books.

The Economist. (2019, January 12). How France redistributes more from rich to poor than Sweden. The Economist. Retrieved from https://www.economist.com/europe/2019/01/12/how-france-redistributes-more-from-rich-to-poor-than-sweden

Turbeville, W. (2015, April 12). Finance is to blame for rise in inequality. Retrieved July 21, 2019, from Time website: https://time.com/3760439/finance-is-to-blame-for-rise-in-inequality/

Venkatasubramanian, V. (2017). How much inequality is fair? Mathematical principles of a moral, optimal, and stable capitalist society. New York: Columbia University Press.

Wembridge, M. (2015, September 10). Subscribe to read. Retrieved July 21, 2019, from Financial Times website: https://www.ft.com/content/9cfa3000-560f-11e5-a28b-50226830d644

World Economic Forum. (2016). Rankings: Global Gender Gap Index 2016. Retrieved July 20, 2019, from Global Gender Gap Report 2016 website: http://wef.ch/1YKx0JW

# aNNEX: sPECIFIC Methodology used

**Norway**

**Maximum:** The maximum salary for 2011 is given in the book. So we derived the values of the remaining years using the inflation rate of 3% (2012 onwards: maximum salary of 2011 \*1.03, before 2011: maximum salary of 2011/1.03)

**Minimum:** The minimum salary for 2011 is given in the book. We calculated the proportion of minimum/average for the year 2011 and used this proportion to find the remaining minimum salary for the other years.

**USA**

**Maximum:** The maximum salary for 2013 is given in the book. So, we derived the values of the remaining years using the inflation rate of 3% (2014 onwards: maximum salary of 2013 \*1.03, before 2013: maximum salary of 2013/1.03)

**Minimum:** we used the minimum hourly wage from this website (<https://edition.cnn.com/interactive/2019/business/us-minimum-wage-by-year/index.html>) and multiply it by 2080, which is the hours worked by an employee on a full time basis (<https://www.accountingtools.com/articles/how-to-calculate-ftes.html>)

**Malaysia**

**Minimum**: We used the data from this website (<https://www.thestar.com.my/metro/views/2016/05/06/minimum-wage-maximum-delay-the-long-overdue-legislation-is-better-late-than-never/>) to derive the minimum income for 2015. Then we calculated the proportion of minimum/average for the year 2015 and used this proportion to find the remaining minimum salary for the other years.

**Maximum:** Using the median salary of CEO from this website (<http://www.salaryexplorer.com/salary-survey.php?loc=130&loctype=1&job=309&jobtype=3>), we assume that to be the maximum salary for 2015. For the other years, we use the maximum salary/ 1.03 (assuming inflation rate is 3%)

**Singapore**

**Minimum:** From this website (<https://payday.com.sg/Payroll-Legislations/singapore-s-government-sets-a-minimum-salary-of-s-1-000-for-cleaners-entry-level.html>), entry level cleaners will receive $1000 per month, with this value, we assume a minimum annual income of $12,000 for the year 2014. Then we calculated the proportion of minimum/average for the year 2016 and used this proportion to find the remaining minimum salary for the other years.

**Maximum:** The Prime Minister of Singapore draws a salary of $2.2 million, according to this website (<https://www.gov.sg/~/sgpcmedia/media_releases/pmo-psd/press_release/P-20180301-1/attachment/Annex%20B%202017%20Review%20Committee%20Report.pdf>) the income of minister is 60% of the median income of the top 1,000 earners who are Singapore Citizens. Hence, the maximum salary is $1.1 million/0.6. For the other years, we use the maximum salary/ 1.03 (assuming inflation rate is 3%)

**France**

**Minimum:** Rhe minimum salary for 2006 is given in the book. We calculated the proportion of minimum/average for the year 2006 and used this proportion to find the remaining minimum salary for the other years.

**Maximum:** The maximum salary for 2006 is given in the book. So, we derived the values of the remaining years using the inflation rate of 3% (2007 onwards: maximum salary of 2006 \*1.03, before 2006: maximum salary of 2006/1.03)

1. It is known among Singaporeans that bribery can help one get away with breaking traffics rules [↑](#footnote-ref-1)