

# The Effect of Child's Happiness and Social Attainment on Parents' Enjoyment of Parenting and Desire to have More Children

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## ABSTRACT

Our paper aims to investigate the effect of a child's happiness and social attainment on parents' enjoyment of parenting and their desire to have more children. As Singapore faces a low fertility rate and ageing population, the government has implemented many policies to promote childbearing. However, these policies are mainly cash incentives and birth rates have not seen significant improvements. Hence, we suspect that it may be due to the lack of focus on intangible factors that affect childbearing. A child's happiness and social attainment is deemed to be potential pivotal factors that affect a

parent's enjoyment of parenting, and consequently their desire and decision to have more children. Our findings have shown that these two variables have effects on women's decisions in childbearing. Therefore, in this paper, we will be suggesting policy changes that may be implemented to address the system involving child's happiness and social attainment, to ameliorate the problem of Singapore's low birth rate. These policies are namely the 'Change in schooling hours' policy and 'Bring your parents to school' scheme.

## 1. PROBLEM CONTEXT

Termed as the "Silver Tsunami", Singapore's population is rapidly ageing, with Total Fertility Rate (TFR) way below the replacement rate of 2.1 births per female. TFR has been generally decreasing from 1.96 since 1988, with the recent lowest of 1.14 in 2018 (Singstat, 2019a). The lowest-low TFR (defined as below 1.3), combined with the increased life expectancy due to medical advances, have resulted in a rapidly ageing population with a shortage of young workers to sustain the workforce. This continued demographic shift has detrimental societal and economic impacts on the country, which affects Singapore's growth and development as a nation (Teng, 2013).

The Singapore government has implemented many pro-birth and pro-family policies over the years. One notable policy was the 2001 Marriage and Parenthood Package (NLB, 2019), in which the Children Development Co-Savings Scheme (colloquially known as the Baby Bonus) was launched. Thereafter, the government reviewed the effectiveness of the measures over time based on

the results of various Government commissioned surveys (Prime Minister's Office, 2017), enhancing the M&P Package in 2004, 2008, 2013 and 2015. Many of these enhancements are cash incentives. For example, the government decided to enhance the package in 2013 to further defray child raising costs for parents by increasing the monetary gifts provided. Government-paid paternity leave for fathers was also increased by one week on top of the current mandatory one week, but on a voluntary basis (Law, 2015). These efforts were aimed at raising the TFR by reducing the costs of having children.

However, TFR and overall birth rates continued to decrease even after multiple policy revisions, dropping to an all-time low of 1.14 most recently in 2018. Moreover, the number of married women staying childless has tripled over the past 20 years (Tan, 2015). This calls into question the efficacy of these solutions, and whether they are targeting the root cause; perhaps monetary costs are not the main concern of most parents when deciding whether to have children. Rather, there could be

more intangible factors that are at play. For instance, fear of stress from raising a child and giving a child happiness, ensuring their child's

(Tarah, 2017). It is evident that the current policies are not enough for parents to overcome the hurdle of childbearing, resulting in a worsening population time bomb which threatens Singapore's competitiveness and survivability as a country.

### 1.1. Purpose of Paper

Factors such as child's happiness, social attainment, parents' enjoyment of parenting were deemed to contribute to the desirability of having children. Our research aims to model the links between the aforementioned factors and their combined effect on desirability to have more children. Thereafter, the model can be used to test the sensitivity of variables in the system, manipulating them to achieve the most beneficial outcome. It is hoped that using this model, solutions which increase the desirability of having children can be devised. These solutions can complement the current cash initiatives in the effort to raise Singapore's TFR.

### 1.2. Research Question

What is the effect of a child's happiness and social attainment on their parents' enjoyment of parenting and desire to have more children?

### 1.3. Time Horizon

A woman is usually fertile during 20-35 years of age (Yourfertility, 2019). In this age range, woman tend to have the ability to bear children if they decide to do so. Hence our model will be simulated on a set time frame of 180 months, corresponding to the total 15 years of active fertility. Time step is set to the smallest time step of 0.0078125 months to model the specific and accurate details of interactions and change within the model.

### 1.4. Reference Mode

The cyclical nature of social attainment and happiness is undocumented in literature. However, this is what we experienced growing up in Singapore. As children, we were constantly pushed by our parents to work hard for our future. The common adage is that 'If you don't work hard now, you will end up sweeping the floor next time!' With the focus on outperforming others, parents sent us for all sorts of lessons and activities. Since our innate instinct as a child was to play, these activities often made us unhappy,

success and expectations of living standards are all cited by women as reasons for not having children

eventually pushing us to drop out of them for more downtime. However, the cycle soon repeats, where our parents would find another activity in the hope of keeping us occupied and 'productive'.

Hence, the number of activities enrolled, and child's happiness should show an opposing cyclical behaviour. When the number of activities is at its peak, the child's happiness should be at its trough. This opposing nature is depicted in Figure 1a below:

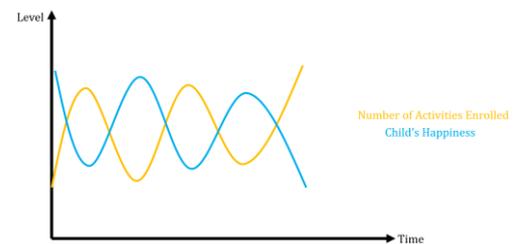


Figure 1a: Behaviour over time graphs of number of activities enrolled and child's happiness

According to Singstat (2019b), each resident ever-married female had 2.05 children on average in 2018. Thus, the number of babies born to a family in our model should be 2; this is represented as 'baby count' in Figure 1b.

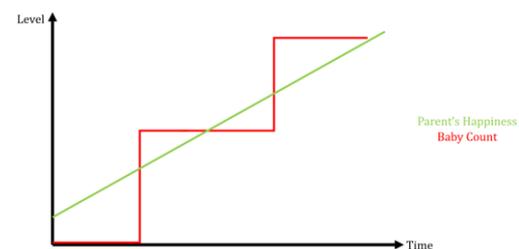


Figure 1b: Behaviour over time graphs of parents' happiness and baby count

According to Baetschmann, Staub, and Studer (2016), having a child was shown to have a positive impact on parents' happiness, even after the child has grown up. Thus, parents' happiness should show an increasing trend, as depicted in Figure 1b.

## 2. STATE OF KNOWLEDGE ASSESSMENT

The state of knowledge assessment will be categorised into four sections: child's happiness, child's social attainment, parents' enjoyment of parenting, and desire to have children.

## **2.1. Child's Happiness**

A child's happiness is determined by many several factors (Dickie, Holder, & Binfet, 2018). Firstly, it is affected by their temperament (Healthychildren, 2009), which has five major characteristics: physical behaviours (active or fidgety behaviour), approach and adaptability to new situations, energy level, mood and attention span. The easy child is one who usually has a positive mood, adapts easily to new situations and people, and faces problems with relatively little anxiety. This means the child carries positivity and happiness on a daily basis and his parents describe him as a "joy to be around." Other temperamental profiles include shy children with anxiety issues but are more accepting once he becomes familiar with new situations. Lastly, the difficult or challenging child reacts negatively and intensely to his surrounds, hence portrays unhappiness and may be frustrating for parents to handle.

Secondly, a child's well-being and environment affects happiness (Schwartz, 2019). Love and affection by parents for children results in life-long positive outcomes for those children. They will have higher self-esteem, improved academic performance, better parent-child communication, and fewer psychological and behaviour problems. On the other hand, children who do not have affectionate parents tend to have lower self-esteem and to feel more alienated, hostile, aggressive, and antisocial.

Thirdly, child's happiness is affected by his academic achievements (Quinn & Duckworth, 2007). Children with higher grades tend to go on to experience higher well-being and satisfaction in life and gives parents the sense of enjoyment and happiness as the child has made the parents proud. It was also found that when a child is happier and in a better mood, his learning speed will be largely increased and is more capable and motivated to do well in his work (Masters, et.al, 1979).

## **2.2. Child's Social Attainment**

A child's social attainment is defined as skills, achievements, academics, financial status and social status (Lui, et. al., 2013). When a child has a higher social attainment, he will innately feel more confident and happier about what he has achieved. However, the commitment towards achieving the level of social attainment affects the amount of downtime for rest and play. Happiness decreases once the child's downtime drops below his personal threshold.

## **2.3. Parents' enjoyment of parenting**

Parents' enjoyment of parenting depends on expectations of the child and expectations of themselves. Expectations of child can be explained in terms of intensive parenting, where parents may have too high expectations for their child to do well in school and commitments (Shirani, et. al., 2012). Being too result-centric, parents may feel the stress and fear that a child will not do well currently and lose out on competition and have a bleak future. This results in parenting being a chore and burden rather than an enjoyable process (Rochman, 2012). Next, expectations of themselves as a good role model to the child generates stress and greatly impacts the confidence of parenting. Hence, when expectations of child and themselves are too high, it will have a negative impact on the process of parenting, and hence their enjoyment decreases. On the other hand, there is an association between a child's academic achievements and parent's enjoyment of parenting. When a child does well, parents will feel more confident that their parenting has been effective, and they feel good about themselves. They feel proud of their child and happy for their future. There is also an association between a parent's enjoyment of parenting on child's happiness, as a more confident and happier parent will provide more affection and love for the child. Hence the child may be less stressed over problems, have better interactions with parents and receive genuine love and happiness.

## **2.4. Desire to have more children**

Women are increasingly not desiring to have more children. The number of married women who are staying childless tripled over the last 20 years (Tan, 2015). Desire to have more children are affected by factors that include financial stability, education and career focus, parenting stress, high expectations and competitive society. Other factors include child's desire to have more siblings and desired size and composition of family (Jones, 2012). Furthermore, the mentality of women is changing due to the fear of stress from raising a child, inability to provide a child happiness and lack of confidence to ensure their child's success and ability to meet expectations of living standards.

## **3. DYNAMIC HYPOTHESIS**

As fertility rates continue to decrease over the years, the government has been using cash incentives to reduce the financial barrier of child-bearing. However, the desire to have children continues to decrease in spite of these policies,



- 2) Social Attainment Gap Loop (Red)
- 3) Child's Learning Speed Loop (Green)
- 4) Child's Personal Expectation Loop (Orange)

The loops have been coloured in the overall model (Figure 2) for easier reference.

#### 4.1. Analysis of Causal Loop Diagram

From the causal loop diagram, child's happiness, net difference in child's social attainment and number of activities enrolled seem to be the main factors determining the overall enjoyment of parenting. To increase enjoyment of parenting, child's happiness must be increased, social attainment can be increased depending on the net effect between impact on child happiness and impact on enjoyment of parenting. In order to keep child's happiness high, the inflows into child's happiness have to be increased. These inflows are 'Child's amount of downtime' and 'Effect of child's attainment on child's happiness'. To keep social attainment high, the inflow of parent's expectation of child's social attainment must be increased. Moving forward, a stock and flow diagram is constructed to simulate how changing different variables in the system will change the inflows into child's happiness and social attainment, thus feeding into a change in the parent's enjoyment of parenting.

#### 4.2. Assumptions and Limitations of Causal Loop Diagram

The causal loop diagram formulated is based on several key assumptions.

First, parents and children are set in an environment and mentality that they need to do well and attain achievements to do well in society. In reality, not all families live by the 'work culture' and achievements are not the priority. This assumption fits the general population of Singapore where the society has a competitive and workaholic culture.

Second, children are generalised to innately enjoy play and dislike work, however in reality there are children who enjoy being busy with work, but not a significant group.

Third, there is no physiological barrier to giving birth - once a woman reaches a certain defined threshold of desire to have more children, the woman who wants to have children will be able to bear children. However, in reality there may be other factors such as financial status that will prevent the decision to have more children.

Fourth, the causal loop diagram focuses mainly on just the interactions between child's happiness and social attainment, hence it does not account for the following pointers:

- 1) External sectors such as financial or socioeconomic status
- 2) Other intangible factors such as confidence in parenting
- 3) Single mothers
- 4) Family influence on having children

As such, this model is limited and unable to reflect accurate effects of the extra variables that are not incorporated into the key feedback loops. To do so, we can extend the system boundary, perform more research and improve the model to be more comprehensive. However, for our research, we will scope in on just the interactions between child's happiness and social attainment.

### 5. STOCK AND FLOW DIAGRAM

The Stock and Flow Diagram (SFD) was constructed to simulate the overall desire to have more children based on the level of child's happiness and his/her social attainment. We employed 4 main stocks that are endogenous to the model: 'PARENT'S ENJOYMENT OF PARENTING', 'DESIRE TO HAVE MORE CHILDREN', 'CHILD'S HAPPINESS' and 'CHILD'S SOCIAL ATTAINMENT'. To supplement the main stocks, additional stocks like 'EXPECTATION OF CHILD'S SOCIAL ATTAINMENT' and 'NUMBER OF ENROLLED ACTIVITIES' are used.

The balancing and reinforcing loops that were covered in the earlier section were also represented in the model using the same colours for easy reference. To quantify our results of DESIRE TO HAVE MORE CHILDREN, we employed a conditional loop function within our model to observe the effect of the level variable on the number of babies born.

The loops in the model (Figure 3) are as follows:

- 1) Social Attainment Gap Loop (Red)
- 2) Virtuous Cycle of Enjoyment and Happiness Loop (Pink)
- 3) Child's Learning Speed Loop (Green)
- 4) Child's Personal Expectation Loop (Orange)
- 5) Desire to have more Children Loop (Blue)

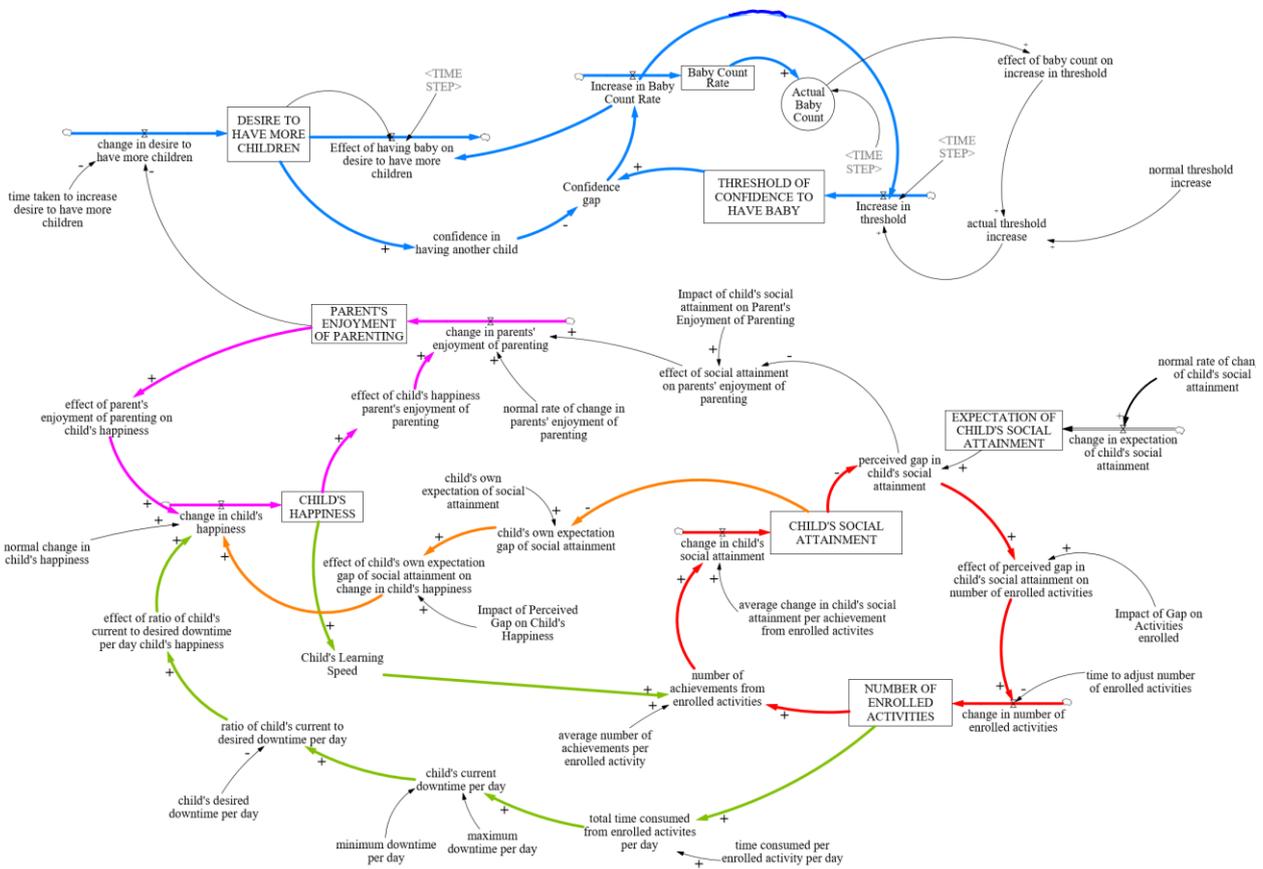


Figure 3: Stock and Flow Diagram

6. MODEL VALIDATION AND ANALYSIS

Referring to Figure 4a, child's happiness and number of enrolled activities is seen to have a cyclical behavior. It is interesting to note that the peak of child's happiness roughly corresponds with the trough of number of enrolled activities. This cyclical behaviour follows the reference mode predicted in Section 1.4, Figure 1.

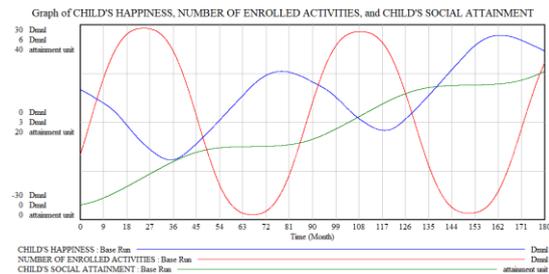


Figure 4a: Graphs of CHILD'S HAPPINESS and NUMBER OF ENROLLED ACTIVITIES, and CHILD'S SOCIAL ATTAINMENT

In addition to its cyclical behavior, the number of enrolled activities is seen to increase over time. The increasing trend is realistic as our threshold for child's social attainment was assumed to increase over time. Therefore, to keep the child's social attainment in line with the general expectations, the child must enroll in more activities.

With the child being enrolled in more activities, it stands to reason that the child's social attainment will increase. This behaviour is seen in Figure 4a, where the child's social attainment is seen to increase over time.

In the long run, child's happiness is seen to increase. This is because a child's social attainment feeds back into his happiness; the increase in social attainment will decrease the child's own expectation gap of social attainment, thereby increasing child's happiness.

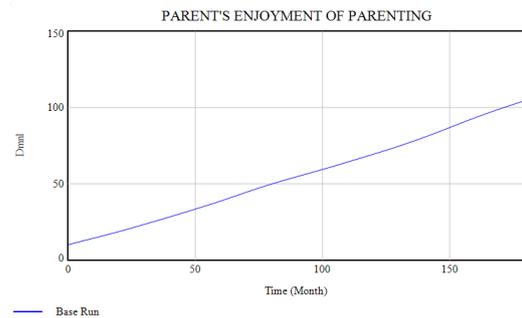


Figure 4b: Graphs of PARENT'S ENJOYMENT OF PARENTING

As child's social attainment increases over time, parents' enjoyment of parenting also increases over time, as seen in Figure 4b. This translates to an increase in desire to have more children and parents' confidence in having more children.

When parents' confidence in having more children equals the threshold, they will have a child, resetting the desire to have more children. This cyclical increase-and-reset behaviour of 'desire to have more children' can be seen in Figure 5:



Figure 5: Graph of Desire to Have More Children

Interestingly, the desire to have more children was seen to be increasing at an increasing rate. This could be due to the increase in parents' enjoyment.

Figure 6 shows the number of babies born to the parents. The decrease in desire to have children corresponds to the increase in baby count. Using this 'baby count' graph, it is possible to test out different scenarios, and observe the resulting baby count for a couple.

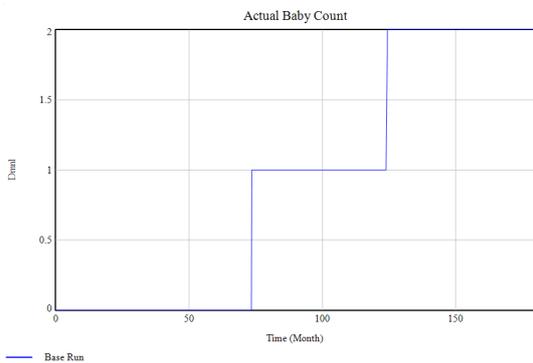


Figure 6: Graph of Baby Count

An interesting finding of our model is the behaviour of effect of social attainment and child's happiness on parents' enjoyment of parenting.

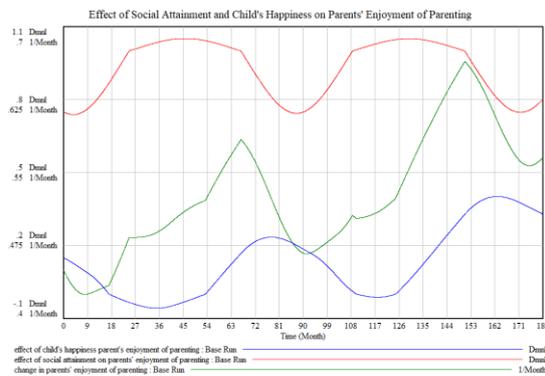


Figure 7: Graphs of effect of social attainment and

child's happiness on parents' enjoyment of parenting

The effect of social attainment on parents' enjoyment of parenting and effect of child's happiness on parents' enjoyment of parenting show an interesting, opposing trend as shown by the red and blue lines in Figure 7. This highlights the delicate, opposing nature of child's happiness and social attainment. When the gap in child's social attainment increases, there is a corresponding decrease in effect of social attainment on parents' enjoyment of parenting. Intrinsically, the large gap in a child's social attainment is due to a low number achievements from the low number of enrolled activities. A low number of enrolled activities translates into a higher amount of downtime that the child enjoys. Thus, the change in child's happiness would be higher, which opposes the effect of social attainment on parent's enjoyment of parenting.

## 7. SENSITIVITY ANALYSIS

Through our sensitivity analysis by running Synthesim, we have found two variables that can impact a significant change in parents' enjoyment of parenting and their desire to have more children. These two variables are minimum downtime per day (Child) and normal rate of change of child's social attainment (Parent's expectation of child).

## 8. POLICY RECOMMENDATIONS

From the sensitivity analysis, it is observed that a child's downtime and expectations of their social attainment are two key variables that have significant impact on the model interactions and change parents' enjoyment of parenting and their desire to have more children. Hence, in our policy testing, we have chosen to work with these two variables. Based on the sensitivity analysis, we found two main ideas to formulate our policies on:

- 1) Increasing the amount of downtime in children
- 2) Limiting the increase in social attainment expectations

### 8.1. Policy 1: Change in School Hours Policy (Targeting child's minimum downtime per day)

It was established in Section 3.2 that prolonged active hours and low amount of downtime negatively affect the child's happiness as well as the overall parents' enjoyment of parenting. Schools in Singapore, regardless of primary, secondary or tertiary levels, mostly start at 7.30am, and between noon and late noon (Lee, 2018). This

means that children and parents wake up as early as 5am if the students take a school bus or public transportation. Considering schooling hours, sleep, transport, meal and miscellaneous time, the maximum downtime a child can get is around 6 hours per day. When children spend their time pursuing extra curriculum lessons and enrichment classes, they have very little, or close to 0 hours of minimum downtime. This leads to them feeling burnt out and unmotivated.

This policy targets the working hours spent at school by Singaporean children, and is based on experimental 'late start school days' policies used by certain schools. For example, Nanyang Girls' High School has lessons starting 45 minutes later from the usual norm of 7.30am. This increases the amount of rest children can get each day. With more rest and energy from the increased downtime, their mood and happiness will increase. Alternatively, school hours can be shortened and end earlier, so that children have more time to pursue their own interests out of school hours.

To test this policy in our model, the school was assumed to implement a compulsory 1-hour downtime at  $t = 100$  months, without time delay. Figure 8 below shows how parents' desire to have more children changes with the policy. Based on our sensitivity analysis, the increase in child's happiness and parent's enjoyment of parenting is much more pronounced when increasing downtime from 0 hours to 1 hour, as compared to an increase from 1 hour to 2 hours. Hence, pushing back the starting school time to 8.30am or ending school earlier by an hour would have beneficial effect on child's happiness and enjoyment of parenting.



Figure 8: Graphical representation of 'Desire to have more children' before and after implementing change in school hours

For this policy to be effective, schools need to be receptive as it requires a change in curriculum and lesson plans. Although the initial stages of optimising lesson plans will be difficult, we believe that such a policy is beneficial in the long

run as seen by our sensitivity analysis. To help schools adapt to the change in curriculum, the change can be slowly phased in during the experimental stage. Overall, this policy would be beneficial for everyone and can be implemented in the Singaporean context to enforce more rest and time for personal endeavours.

## 8.2. Policy 2: 'Bring your parents to class' scheme (Targeting expectation of social attainment)

From the model analysis, increasing expectations drives the increase in social attainment, and increase child's happiness from the satisfaction of achievements. It also increases enjoyment of parenting as parents feel proud and happy for their child's success. However, the continual increase in expectations also decreases the downtime of a child, and once the child becomes 'overloaded' with activities, he will feel burnout and no longer feel happy with his current state of work, because he lacks rest and time to enjoy. This is why there should be a limit in the increase in social attainment expectations, which is what 'Bring your parents to class' scheme aims to achieve.

Our policy aims to allow parents to change their mentality of forcing their child upon the 'rat race', to allow them to understand that they should not have too high expectations that is unhealthy for the child and themselves. The Ministry of Education recently changed the educational streaming system, and the Education Minister Ong Ye Kung mentioned that it was time to shift away from the mentality of "making my children study hard to cope with school demands" to "letting my children pursue their strengths and interests to their fullest efforts" (Tan, 2019). This is in fact what we wish to achieve in our policy, to let parents understand that they should look beyond academic achievements in schools.

Under this scheme, parents are encouraged to attend school with children to experience school life and understand their child's strengths and interest. There will be workshops and seminars for both parent and child to attend together so that they can build a common understanding of what expectations are good and achievable, so that not too much stress will be put on either party. This also ensures family time, fosters communication between parent and child and reduces the unhappiness that comes from over committing to activities.

For this policy to be effective, schools need to be more proactive in facilitating the understanding between parent and child. Participants of the

workshops need to be reviewed over time so that the vicious workaholic cycle does not resurfaces. With a limit in expectations, a child will not go into the phase where he will be burnout and have zero motivation or happiness at his current state of life. This boosts child’s happiness, and parents’ enjoyment of parenting.

Should this policy be successful, parents with a deeper understanding of their child’s strengths will accordingly scale their expectations; their notion of social attainment becomes more toned down. As such, this policy is modelled by an increase in the normal rate of change of child’s social attainment, since their children are more likely to attain more socially in the eyes of their parents.

The graph in Figure 9 below shows how parents’ desire to have more children changes with the policy.

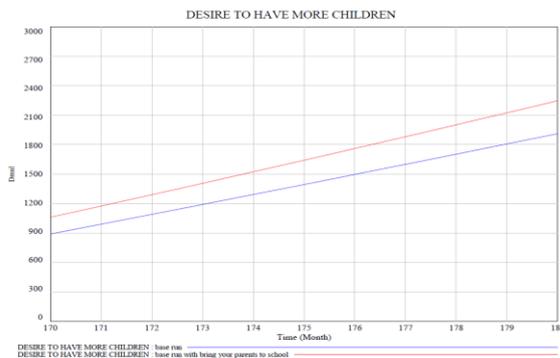


Figure 9: Graphical representation of ‘Desire to have more children’ before and after implementing ‘Bring your parents to school’

### 8.3. Combined Policy Effects

The parents’ desire to have more children is seen to increase when the policies recommended are executed simultaneously, as shown in Figure 10.

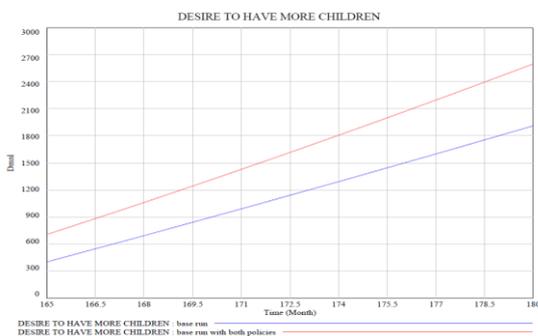


Figure 10: Graphical representation of ‘Desire to have more children’ before and after implementation of policies

## 9. CONCLUSION

### 9.1. Main Findings

Our main findings have shown that child happiness and social attainment are indeed positively associated with parents’ enjoyment of parenting and their desire to have more children. However, there is a limit to which social attainment can increase to increase child’s happiness before the reverse effect takes place due to the child being burnout from the lack of downtime. This leads to an overall drop in child’s happiness which dominates the effect of social attainment on enjoyment of parenting.

It was observed that parent’s expectation of child’s social attainment and child’s downtime are the most sensitive and impactful variables in the model. Thus, stakeholders such as schools and parents have to work together on increasing downtime and keeping a limit to their social attainment expectations to ameliorate the birth rate problem. We proposed the implementation of ‘Change in school hours’ policy and ‘Bring your parents to school’ scheme. These implementations are expected to increase the overall enjoyment of parenting, and hence desire to have more children.

### 9.2. Areas for further research

We believe further research can be done to explore other factors that affects the desire to have children, which include financial stability, child’s desire to have siblings, and desired family composition. These were identified in the causal loop diagram but not focused on in the stock and flow model.

The model can also be amended to include variables such as yearly income, cash bonus amount and age of parents. These variables would enable us to test the effectiveness of the existing cash incentive-based solutions both individually, and in tandem with our proposed solutions. The interaction between the tangible (cash incentives) and intangible (our proposed policies) solutions would undoubtedly produce interesting results.

### 9.3. Final Closure

As Singapore continues to be troubled with declining birth rates, this paper hopes to better understand the different reasons deterring Singaporean couples from having children. With better understanding, more effective policies can be formulated and used to solve the problem.

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