

The Fertility Conversion Gap: Marriage Bottlenecks, Opportunity Costs, and the Limits of Pronatalist Policy in Singapore

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ABSTRACT

Singapore presents a pronounced pronatalist policy puzzle: resident total fertility fell from 1.25 in 2014 to a preliminary record low of 0.87 in 2025 even as public support for marriage and parenthood expanded materially. This paper develops the Fertility Conversion Gap (FCG) framework to explain why aggregate fertility can remain weak despite persistent family aspirations and increasingly generous downstream support. Rather than treating fertility as a single choice, the framework models realised births as a sequence of conditional transitions from family aspiration to partner formation, marriage, first birth, second birth, and higher-order births. A formal Upstream Bottleneck Attenuation proposition shows that the aggregate effect of any intervention at a downstream stage is multiplied by the probability of successfully crossing all preceding stages. The paper combines this model with a dual-constraint household framework in which monetary resources and time-career capacity are separately binding, thereby distinguishing financial affordability from the shadow costs of parenthood. Using a structured analytic case study of official Singapore demographic series, the 2021 Marriage and Parenthood Survey, policy documents through August 2026, and established fertility research, the analysis identifies descriptive patterns consistent with conversion losses at multiple points: weaker relationship and marriage formation, delayed first births, declining completed fertility within marriage, and substantial work-family and care constraints. The 2026 Marriage and Parenthood Reset and National Day Rally reforms broaden support toward longer-duration financial assistance, protected caregiving time, preschool affordability, and housing access, while relationship formation and workplace-cultural constraints remain subjects of continuing policy development. The paper argues that pronatalist policy should be evaluated by stage-specific conversion effects and policy-conversion alignment, not expenditure alone. This reframes Singapore's fertility challenge from a generic affordability problem into a sequential coordination problem across institutions, life-course timing, and household constraints.

Keywords: fertility conversion gap; marriage; opportunity costs; pronatalist policy; Singapore

INTRODUCTION

Singapore has entered a demographic regime in which conventional descriptions of low fertility are increasingly inadequate. The resident total fertility rate (TFR) declined from 1.25 in 2014 to 0.97 in both 2023 and 2024, before falling to a preliminary 0.87 in 2025. Resident live births fell to 27,529 and citizen live births to 26,201 in 2025, both markedly below their 2024 levels (Ministry of Social and Family Development, 2025; Singapore Department of Statistics, 2026a). The 2025 decline should not be read mechanically as a one-year structural break because 2024 was a Dragon Year and some intertemporal shifting of Chinese births is plausible. Nevertheless, the longer trend is unmistakable: Singapore has moved from low fertility to persistent ultra-low fertility while the number of potential parents in future cohorts is itself beginning to shrink (National Population and Talent Division, 2026e).

The analytical puzzle is sharpened by policy effort. Singapore has progressively expanded Baby Bonus transfers, Child Development Account support, tax relief, parental leave, preschool subsidies, housing priority, assisted-reproduction support, and, more recently, the Large Families Scheme. In February 2026, the Government estimated that marriage and parenthood initiatives would cost close to S\$7 billion in FY2026, compared with more than S\$4 billion in FY2020 (Ministry of Finance, 2026). In August 2026, a further package announced at

the National Day Rally replaced the existing Baby Bonus and Large Families cash architecture with a more sustained SG Child Support Package of up to S\$62,000 per Singapore Citizen child, alongside expanded childcare leave, preschool affordability measures and stronger housing support (National Population and Talent Division, 2026d). Increasing policy effort and falling fertility therefore coexist. This coexistence does not demonstrate policy failure, because the counterfactual fertility rate without support is unobserved. It does, however, require a theory of why large and potentially effective interventions can generate only modest aggregate demographic movement.

Existing fertility economics provides several parts of that explanation but rarely integrates them as a sequential policy problem. Classical household models emphasise income, prices, opportunity costs, and the quantity-quality trade-off (Becker, 1960; Becker & Lewis, 1973). Contemporary research gives greater weight to work-family compatibility, gender relations, labour-market institutions, childcare, and the ability of couples to reconcile two careers with parenthood (Adserà, 2004; Doepke et al., 2023; McDonald, 2000). East Asian research adds delayed and declining marriage, strongly institutionalised links between marriage and childbearing, intensive educational investment, and persistent family-role expectations (Anderson & Kohler, 2013; Frejka et al., 2010; Jones, 2007; Raymo et al., 2015). Research on fertility intentions further shows that desired family size is neither automatically realised nor invariant over the life course (Ajzen & Klobas, 2013; Liefbroer, 2009). Yet policy debates still tend to aggregate these mechanisms into a single question: how much support is required to raise the TFR?

This paper argues that the more useful question is where potential fertility is lost before a birth can occur. It develops the Fertility Conversion Gap (FCG), a stage-based framework in which realised fertility is produced through a chain of conditional transitions: family aspiration, partner formation, marriage, first birth, second birth, and higher-order births. In this framework, a generous benefit paid after childbirth may substantially improve parental welfare and even raise the probability of an additional birth among eligible couples, while having no direct effect on people who have not found a partner or entered marriage. As upstream conversion weakens, the population exposed to downstream pronatalist instruments becomes smaller. The result is an attenuation mechanism that is conceptually distinct from low policy efficacy.

The paper makes four contributions. First, it formalises fertility as a sequential conversion process and derives an Upstream Bottleneck Attenuation result showing how earlier transition probabilities mechanically scale the aggregate impact of later-stage policy. Second, it integrates monetary and non-monetary constraints through a dual-constraint household model, clarifying why cash transfers may have low marginal effects when time, caregiving capacity, career interruption, or uncertainty is binding. Third, it applies the framework to Singapore using a structured triangulation of demographic outcomes, stated aspirations and barriers, and policy incidence. Fourth, it introduces a Policy Conversion Alignment Index as a future evaluative tool for comparing the distribution of policy resources with the distribution of conversion losses. The contribution is therefore not another list of reasons for low fertility. It is a theory of how multiple frictions interact, why policy returns depend on the stage at which they operate, and how a pronatalist portfolio can become misaligned even when each individual programme is defensible.

LITERATURE REVIEW

From the price of children to the compatibility of careers and family

Economic models of fertility began by treating children as utility-generating household choices subject to income and resource constraints. In this tradition, the quantity-quality interaction implies that rising income can increase the desired investment per child rather than the number of children, because the shadow price of child quantity rises with the chosen quality of each child (Becker, 1960; Becker & Lewis, 1973). This mechanism remains relevant in high-investment East Asian settings, where educational competition and intensive parenting can increase expected expenditures of both money and time (Anderson & Kohler, 2013).

The newer economics of fertility is less compatible with a simple income story. Across high-income societies, female employment and fertility no longer display a uniformly negative relationship, and the key distinction increasingly concerns whether institutions permit work and family to be jointly feasible (Doepke et al., 2023).

Labour-market uncertainty, unstable contracts, unemployment risk and high returns to career continuity can delay or reduce fertility (Adserà, 2004). Family policy research similarly indicates that childcare, paid leave and financial transfers can support fertility, but effects vary across policy instruments and institutional contexts (Luci-Greulich & Thévenon, 2013; Thévenon, 2011). Quasi-experimental evidence shows that transfers or earnings-related leave can affect childbearing, yet the response is heterogeneous and depends on whose relevant constraint is actually relaxed (Milligan, 2005; Raute, 2019).

Marriage as an upstream demographic institution in East Asia

Very low fertility in East Asia cannot be analysed independently of marriage. Delayed marriage and non-marriage have stronger fertility consequences where childbearing outside marriage remains uncommon and where cohabitation is less institutionally substitutable for marriage than in much of Northern and Western Europe (Jones, 2007; Raymo et al., 2015). Frejka and colleagues identify postponement, incomplete recuperation, educational expansion, employment change, and persistent gendered family expectations as central features of the East Asian fertility transition (Frejka et al., 2010). This literature implies that a policy portfolio focused primarily on the cost of births can miss a prior demographic gate: the formation of a stable partnership and, in Singapore's institutional context, marriage.

Gender theories deepen the argument. Very low fertility may emerge when women experience high equality in education and labour-market institutions but lower equality in family-oriented institutions and domestic work (McDonald, 2000). Later work describes a possible second phase of the gender revolution in which men's greater involvement in domestic and care work can support both partnership stability and fertility (Goldscheider et al., 2015; Esping-Andersen & Billari, 2015). These theories matter for Singapore because survey evidence shows strong endorsement of equal parental responsibility but a persistent disparity in actual childcare time, a pattern consistent with a gap between normative expectations and lived constraints.

Fertility intentions, timing, and the aspiration-realisation problem

Fertility intentions are not births. The theory of planned behaviour distinguishes attitudes and intentions from perceived behavioural control, an especially important distinction where childbearing depends on a partner, timing, health, employment, housing and caregiving resources (Ajzen & Klobas, 2013). Longitudinal evidence also shows that family-size intentions are revised, often downward, as people age and encounter partnership and occupational events. Delayed entry into parenthood increases the probability that initially higher intentions will not be realised (Liefbroer, 2009). The familiar gap between desired and achieved family size is therefore not a single residual. It is the cumulative outcome of several transitions, each with different determinants.

Timing creates an additional measurement problem. Period TFR can fall when births are postponed even if completed cohort fertility changes less, the classic distinction between fertility tempo and quantum (Bongaarts & Feeney, 1998; Balbo et al., 2013). Singapore exhibits both mechanisms. The median age of citizen mothers at first birth rose from 30.3 in 2014 to 31.6 in 2024, while the average number of children born to ever-married resident women aged 40-49 fell from 1.87 to 1.69 over the same decade (National Population and Talent Division, 2025; Singapore Department of Statistics, 2025). This means that postponement is not a sufficient explanation: completed fertility within marriage has also weakened.

Research gap

The literature therefore identifies many plausible determinants, but it offers less guidance on how to evaluate a policy portfolio when fertility depends on a chain of eligibility and behavioural transitions. Standard analyses compare policy generosity with TFR, or estimate the effect of a specific reform on births among an exposed population. Both approaches can obscure a composition problem: as fewer people reach marriage or parenthood, the eligible population for later-stage programmes contracts. The FCG framework addresses this gap by separating stage-specific policy efficacy from stage exposure. This distinction is central to the Singapore case because policy can be highly supportive for existing parents while aggregate fertility continues to decline through upstream attrition.

THEORETICAL FRAMEWORK

The Fertility Conversion Gap

Let an individual or couple begin with a desired completed family size N^* and end the reproductive life course with realised births N . The broad Fertility Conversion Gap for cohort c is defined as the difference between desired and realised completed fertility. This is a conceptual population quantity rather than an estimate derived from the 2021 Singapore survey, because the available public survey does not follow a single cohort from intention to completed fertility.

	$G_c = E[N_i^* c] - E[N_i c]$	(1)
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Equation (1) is useful but still too aggregated for diagnosis. The paper therefore decomposes realisation into a sequence of transition probabilities. Let p_R denote the probability that a person with a family aspiration forms a serious partnership within the relevant life-course horizon, and let p_M denote the conditional probability that such a partnership reaches marriage. Conditional on marriage, let p_1 denote the probability of a first birth and p_k the probability of progressing from parity $k - 1$ to parity k . For a maximum parity K used for analysis, expected births among those beginning with a family aspiration can be written as:

	$\mu = p_R p_M p_1 \left[1 + p_2 + p_2 p_3 + \dots + \prod_{j=2}^K p_j \right]$	(2)
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Equation (2) makes two features explicit. First, fertility is multiplicative as well as additive: failure at an early gate removes exposure to all later parity transitions. Second, the same policy can have a different aggregate yield when the upstream probabilities change, even if its effect on the targeted stage is unchanged.

Proposition 1: Upstream Bottleneck Attenuation

For the general conversion chain, let z_j denote the conditional probability of crossing transition j , so that the probability of reaching a terminal stage J is $\Pi_J = \prod_{j=1}^J z_j$. Suppose policy instrument x affects only transition m . The marginal effect of x on the terminal probability is:

	$\frac{\partial \Pi_J}{\partial x} = \left(\prod_{j=1}^{m-1} z_j \right) \frac{\partial z_m}{\partial x} \left(\prod_{j=m+1}^J z_j \right)$	(3)
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The first product in Equation (3) is the Stage Exposure Factor for policy m . It is the probability of reaching the stage at which the policy can operate. Holding the stage-specific causal response $\partial z_m / \partial x$ constant, any decline in an upstream transition mechanically reduces the aggregate effect of the intervention. This is the Upstream Bottleneck Attenuation proposition. It does not claim that downstream benefits are ineffective. It shows why effectiveness among eligible families and population-level fertility effects are different estimands.

A direct implication is that policies tied to childbirth can improve welfare, reduce child poverty, support parental time, and raise subsequent parity progression while still leaving the main upstream bottleneck untouched. In a society where marriage is strongly connected to childbearing, falls in p_R or p_M scale down the aggregate demographic reach of every later birth-contingent programme.

Proposition 2: Dual monetary and time constraints

A second mechanism concerns the type of constraint being relaxed. Let households derive utility from consumption c , number of children n , child investment q , and leisure l . They face a monetary budget and a separate time constraint. A stylised choice problem is:

	$\max_{c,n,q,l} U(c,n,q,l) \text{ s.t. } c + nC(q) \leq Y + S; \quad l + n\tau(q) + h \leq T$	(4)
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Here $C(q)$ is direct expenditure per child at quality q , Y is disposable household resources, S is policy support, $\tau(q)$ is parental time required per child, h is market and other committed time, and T is the household time endowment. A cash transfer increases $Y + S$ and relaxes the monetary constraint. It does not directly expand T . If the time constraint binds tightly, the marginal fertility response to an additional dollar can be small even when the transfer is substantial. Parental leave, flexible work, reliable childcare, and greater within-household sharing act more directly on the time constraint or its shadow price.

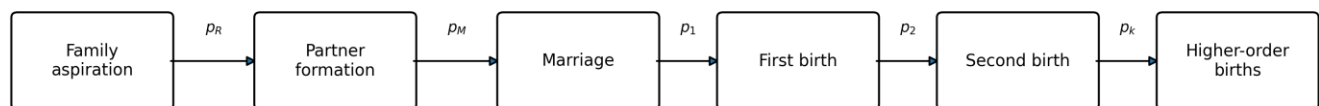
This model formalises a binding-constraint migration hypothesis. As direct child costs receive greater subsidy, the limiting margin can shift toward time, career continuity, psychological load, coordination between two careers, or uncertainty. Singapore's own 2021 survey is consistent with multiple constraints: financial cost is prominent, but work-family compatibility, stress and lack of time also feature strongly, while flexible work arrangements are overwhelmingly viewed as making family formation easier (National Population and Talent Division, 2022). Recent official consultations similarly identify time scarcity and the intensity of work and parenting as recurring concerns (National Population and Talent Division, 2026b).

Policy Conversion Alignment Index

For policy evaluation, let w_j be the share of total estimated fertility conversion loss attributable to stage j and s_j the share of fertility-directed policy resources or policy intensity targeted at that stage, with both shares summing to one. A simple Policy Conversion Alignment Index (PCAI) is:

	$\text{PCAI} = 1 - \frac{1}{2} \sum_{j=1}^J w_j - s_j $	(5)
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PCAI ranges from 0 to 1, with higher values indicating closer alignment between the distribution of diagnosed conversion losses and the distribution of policy effort. The index is not estimated in this paper because Singapore does not publish a complete stage-level decomposition of marriage and parenthood expenditure, and causal loss shares cannot be inferred from aggregate statistics. PCAI is therefore proposed as a future empirical measurement architecture, not reported as an observed Singapore result. Operationalisation would require a separate research programme linking stage-specific transition estimates to consistently defined fiscal or policy-intensity accounts. Its present value is methodological: it specifies what a stage-aware monitoring system should eventually measure rather than treating total expenditure as a sufficient indicator of policy intensity.



Policy exposure becomes conditional on successfully crossing all earlier gates

Upstream frictions therefore attenuate the aggregate yield of downstream pronatalist instruments

Figure 1: The sequential fertility conversion chain and upstream attenuation mechanism

Table 1: Operational structure of the Fertility Conversion Gap framework

Stage	Transition probability	Illustrative friction	Policy family most directly relevant
Aspiration to partner formation	p_R	Limited social networks, low dating activity, competing life goals	Social connection, relationship capabilities, community and workplace time
Partner formation to marriage	p_M	Partnership instability, housing or career sequencing, delayed commitment	Housing access, relationship support, employment security
Marriage to first birth	p_1	Timing, fertility health, care availability, career interruption	Parental leave, fertility healthcare, childcare, first-child support
First to second birth	p_2	Experienced care burden, work-family conflict, time scarcity	Care infrastructure, flexible work, leave, sustained child support
Second to higher-order births	p_k	Cumulative cost, housing space, coordination load, intensive parenting	Housing, education and care cost relief, large-family support

METHODOLOGY

Research design

The study uses a theory-building analytic case-study design with structured secondary-data triangulation. Singapore is treated as a strategically informative case because it combines a long-standing pronatalist policy architecture, unusually high administrative data quality, strong institutional coupling between marriage and childbearing, high human-capital investment, and an exceptionally low fertility rate. The purpose is analytical generalisation: to develop and stress-test a mechanism that can later be estimated with linked microdata, rather than to claim that Singapore is statistically representative of all low-fertility societies.

Three evidence classes are triangulated. First, demographic outcomes are drawn from the Singapore Department of Statistics and Population in Brief, including TFR, births, first-birth timing and completed fertility among ever-married women (Singapore Department of Statistics, 2025; Singapore Department of Statistics, 2026a; National Population and Talent Division, 2025). Second, aspirations and perceived constraints are drawn primarily from the 2021 Marriage and Parenthood Survey, which surveyed 2,848 never-married and 3,017 married residents aged 21-45 (National Population and Talent Division, 2022). Third, policy incidence is reconstructed from official fiscal and policy documents through 26 August 2026, including the M&P Reset Workgroup and the first National Day Rally 2026 measures (Ministry of Finance, 2026; National Population and Talent Division, 2026a; National Population and Talent Division, 2026d). Scholarly literature is used to identify mechanisms and boundary conditions rather than to substitute international correlations for Singapore-specific evidence.

Analytic procedure

The analysis proceeds in four steps. Step one establishes the demographic trend and distinguishes period timing from completed fertility. Step two maps observable evidence onto the sequential conversion stages. Step three classifies major policy instruments by the earliest stage at which they can plausibly alter a transition, distinguishing direct effects from indirect norm-setting or welfare effects. Step four assesses qualitative alignment between diagnosed bottlenecks and policy coverage, with explicit attention to reforms announced in August 2026. Claims are graded as observed, strongly consistent, or hypothesised. No aggregate time-series coefficient is interpreted causally because policy effort is endogenous to fertility decline and the annual sample is too small for credible structural identification.

Operational definitions and inferential limits

FCG refers to the gap between desired and realised fertility generated across a sequence of life-course transitions. The term does not imply that every unfulfilled aspiration is a policy failure, that individuals owe society a birth, or that fertility should be maximised regardless of autonomy. Some people rationally revise preferences, choose childlessness, or prefer fewer children. The policy-relevant component is narrower: conversion losses among people who report a desire for marriage or children but encounter constraints they would prefer to overcome. This distinction is ethically necessary and empirically important.

The 2021 survey cannot estimate Equation (1) directly because respondents are observed at different ages and family stages, and ideal family size is not identical to an intention with a time horizon. The paper therefore uses the survey as evidence of an aspiration-outcome discrepancy, not as a cohort estimate of the FCG. Similarly, the 2025 TFR is a period measure and is preliminary. The analysis deliberately avoids claiming that the 2025 fall is caused by any single factor or that financial support has failed. The framework instead asks whether the portfolio is exposed to upstream attenuation and whether non-monetary constraints remain binding.

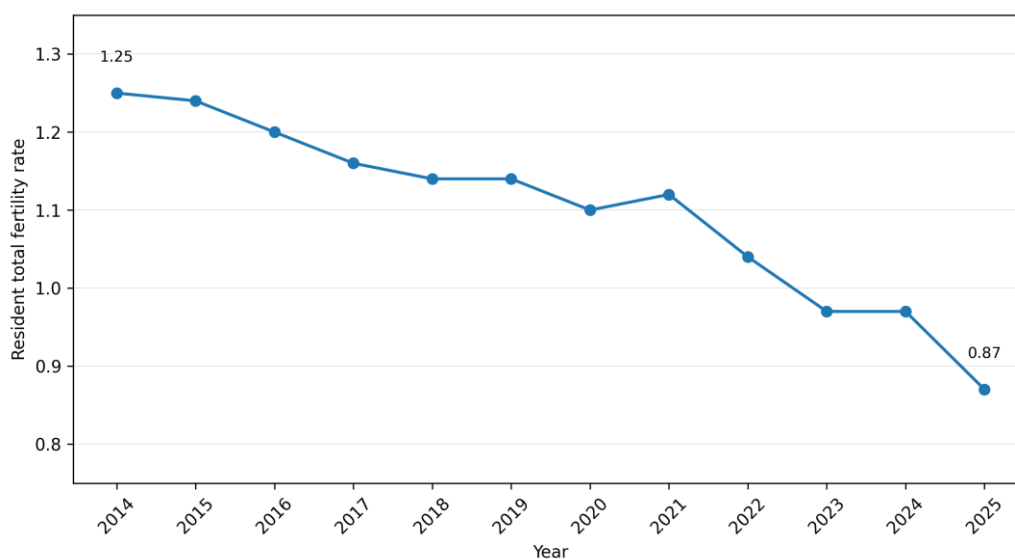


Figure 2: Singapore resident total fertility rate, 2014-2025

Source: Ministry of Social and Family Development (2014-2024) and Singapore Department of Statistics (2025 preliminary).

RESULTS

A structural decline with both tempo and quantum components

The first descriptive result is that Singapore's fertility decline is not well described by a temporary timing fluctuation alone. From 2014 to 2025, resident TFR fell by 30.4%, from 1.25 to 0.87 (Ministry of Social and Family Development, 2025; Singapore Department of Statistics, 2026a). The median age of citizen mothers at first birth increased by 1.3 years between 2014 and 2024, from 30.3 to 31.6, indicating continued postponement (National Population and Talent Division, 2025). Yet fertility quantum also weakened: among ever-married resident women aged 40-49, an age group close to completed childbearing, average children born declined from 1.87 in 2014 to 1.69 in 2024. University-educated women in this age group averaged 1.62 children in 2024 (Singapore Department of Statistics, 2025). Taken together, the timing and completed-fertility patterns are consistent with incomplete recuperation, although the aggregate data do not identify the causal contribution of any single mechanism.

The 2025 figures sharpen the scale of the problem but should be contextualised. Citizen live births fell from 29,237 in 2024 to 26,201 in 2025, a 10.4% decline in the latest Department of Statistics release (Singapore Department of Statistics, 2026a). Official commentary notes that the year after a Dragon Year can show a

negative comparison, while also emphasising that the longer downward trajectory predates this calendar effect. The FCG argument therefore rests on multi-year structural evidence rather than on attributing special meaning to a single annual observation.

Upstream conversion: relationship formation and marriage

The clearest descriptive indication of a possible upstream bottleneck comes from the coexistence of family aspirations and weak relationship formation. In the 2021 survey, 80% of single respondents aged 21-35 intended to marry and 77% of all single respondents wanted children. Yet half of single respondents were not currently dating, and 38% of those not dating reported that they had never dated. Limited social circles and limited opportunities to meet potential partners were among the most commonly reported reasons (National Population and Talent Division, 2022). These data do not establish that non-dating causes lower fertility or that all non-dating singles would otherwise marry. They do, however, show that stated preference for family formation and realised relationship formation are not equivalent.

Administrative indicators are also consistent with a marriage bottleneck interpretation. Citizen marriages fell from 24,355 in 2023 to 22,955 in 2024, while the median age at first marriage reached 30.8 for citizen grooms and 29.1 for citizen brides in 2024 (National Population and Talent Division, 2025). In 2025, there were about 24,700 registered marriages across residency categories, 6.2% fewer than in 2024 (National Population and Talent Division, 2026c). Given Singapore's strong institutional link between marriage and childbearing, lower or later marriage would be expected to reduce first-birth exposure and shorten the time available for subsequent parity progression, other things equal. The observed pattern is therefore consistent with the multiplicative channel described by Equation (3), rather than constituting a causal estimate of that channel.

Midstream conversion: delayed first birth and a compressed reproductive window

Later marriage does not necessarily shift births one-for-one. It can compress the interval in which couples realise a two- or three-child intention, particularly when desired birth spacing and age-related fertility are considered. Singapore's age-specific fertility profile is now concentrated in the thirties, while the age at first birth continues to rise. A shorter remaining reproductive window can increase the consequences of shocks such as job transitions, caregiving crises, housing delays or fertility difficulties because there is less calendar time for recuperation. In FCG terms, postponement may lower both p_1 and later p_k even when the underlying preference for children remains positive. This is a mechanism hypothesis to be tested with event-history or longitudinal data, not an effect estimated from the aggregate series used here.

This mechanism also cautions against interpreting assisted reproduction as a complete substitute for earlier family formation. The 2021 survey found widespread overestimation of the success of assisted reproductive technology at older maternal ages (National Population and Talent Division, 2022). The policy implication is not to prescribe early childbirth, but to treat timing information, fertility health, housing sequencing and career compatibility as part of the conversion environment rather than as separate domains.

Downstream conversion: parity progression, care burden and work-family conflict

Among married respondents in the 2021 survey, 92% regarded two or more children as ideal, yet 51% had fewer than two at the time of survey. Because respondents were aged 21-45, that comparison cannot be read as completed unmet fertility. It nevertheless identifies a large pool in which aspirations remain ahead of current outcomes. Financial cost was the most common reason among married respondents who did not want more children, while stress and difficulties managing work and family were also prominent. Among those open to another child, financial security and the ability to cope with work and family were leading considerations (National Population and Talent Division, 2022).

The care-time evidence is consistent with the dual-constraint interpretation. Although 95% of married survey respondents agreed that both parents should share equal responsibilities at home, women reported substantially more childcare time than men: about six versus 3.6 hours on a normal weekday and ten versus 7.7 hours on weekends. Women were also less satisfied with the division of domestic labour. At the same time, 90% of

married respondents agreed that flexible work arrangements make it easier to start a family and 81% agreed they make it easier to have more children (National Population and Talent Division, 2022). These responses suggest that perceived constraints extend beyond the direct price of diapers, preschool or education to the coordination of paid work, care, recovery time and domestic labour. They do not, by themselves, identify the magnitude of any causal effect on births.

Table 2: Selected indicators mapped to the fertility conversion framework

Indicator	Earlier value	Latest value	FCG interpretation
Resident TFR	1.25 (2014)	0.87 (2025, preliminary)	Aggregate outcome consistent with losses across multiple stages
Citizen births	33.2 thousand (2014)	26,201 (2025)	Smaller realised birth flow and smaller future parent cohorts
Median age, citizen mother at first birth	30.3 (2014)	31.6 (2024)	Later conversion to first birth and less time for parity progression
Children born, ever-married resident women 40-49	1.87 (2014)	1.69 (2024)	Quantum decline within marriage, not only postponement
Citizen marriages	24,355 (2023)	22,955 (2024)	Weakening upstream exposure to first-birth policies
Singles aged 21-35 intending marriage	80% (2021 survey)	Cross-sectional survey	Aspirations remain higher than realised relationship formation
Married respondents ideal family size ≥ 2	92% (2021 survey)	Cross-sectional survey	Current family size frequently below ideal, but not a completed-cohort measure

Policy incidence: substantial support, but historically conditional exposure

Singapore's policy portfolio is broad and should not be caricatured as cash-only pronatalism. Housing, leave, childcare, healthcare and workplace measures have expanded alongside direct transfers. Nevertheless, much of the most visible fiscal support has historically become available after marriage, pregnancy or childbirth. This creates conditional exposure: individuals stuck at partner formation or marriage cannot benefit directly from a Baby Bonus, Child Development Account, preschool subsidy or parental leave. Even within parenthood, a family unable to solve the time constraint may value a cash transfer without changing parity. The scale of spending reinforces the importance of distinguishing welfare effects from fertility effects. Close to S\$7 billion of FY2026 marriage and parenthood expenditure includes large early-childhood and leave investments (Ministry of Finance, 2026). Such expenditure can be socially valuable even if TFR does not rise, because it improves child development, parental security and gender sharing. The FCG framework therefore rejects a simplistic cost-per-baby interpretation. Its narrower claim is that aggregate fertility impact depends on whether policy reaches the stage where the dominant conversion loss is occurring.

The 2026 reset: a partial movement toward stage-aware pronatalism

Policy direction changed materially during 2026. The M&P Reset Workgroup was established explicitly to examine not only financial costs but also work-life support, caregiving, housing, healthcare, preschool, education, social norms and relationship formation (National Population and Talent Division, 2026a). This is analytically significant because it broadens the object of policy from the birth event to the marriage and parenthood journey. It also aligns with the FCG proposition that upstream and non-monetary constraints can attenuate downstream support.

The first accepted Reset recommendations, announced on 23 August 2026, further altered policy incidence. The SG Child Support Package provides up to S\$62,000 per citizen child from birth through age 17 rather than

concentrating support in the early years. Childcare leave is to increase with the number of children, the Government will reimburse employers for the full duration of child-related leave schemes up to prevailing caps, preschool affordability and access are to be strengthened, and first-timer families with children are to receive additional housing ballot chances under forthcoming implementation arrangements (National Population and Talent Division, 2026d). These changes address both the monetary and time constraints more directly than a one-off birth payment.

At the same time, the August announcement explicitly states that work-life support, fertility and maternity health, relationship formation and education remain under further study, with fuller recommendations due in 2027 (National Population and Talent Division, 2026d). The framework therefore interprets 2026 not as evidence that policy is misdirected, but as evidence that policy itself is moving toward a stage-aware diagnosis. The remaining research question is whether the shift is large enough and sufficiently upstream to alter p_M , p_1 and subsequent parity transitions.

Table 3: Stage incidence of selected Singapore marriage and parenthood policy domains

Policy domain	Earliest conversion stage directly affected	Mechanism	FCG assessment after 2026 changes
Relationship formation initiatives	Partner formation	Expands opportunities and capabilities for meaningful relationships	Upstream and potentially multiplicative, but difficult to design without compromising autonomy
Housing priority and access	Marriage / first birth	Reduces sequencing uncertainty and space constraints	More upstream than cash birth benefits; 2026 changes strengthen family-linked access
Parental and childcare leave	First and subsequent births	Relaxes protected-time constraint and employer cost	Directly addresses time scarcity; effectiveness depends on workplace culture and take-up
Preschool and caregiving	First and subsequent births	Reduces recurring money and time costs	High relevance to experienced-parent parity decisions
SG Child Support Package	First and subsequent births	Sustained cash and account support through age 17	Improves financial assurance but remains conditional on having a child
Fertility and maternity health	Marriage / first birth	Reduces health-related delay and information failures	Important under later family formation; still under continued Reset study
Workplace culture and flexible work	Partner formation through higher parity	Changes opportunity cost and time feasibility across life stages	Potentially broadest stage reach, but implementation quality is heterogeneous

DISCUSSION

Why spending can rise while fertility falls

The central empirical paradox is now easier to interpret. Rising expenditure and falling TFR are not logically inconsistent for at least four reasons. First, policy is endogenous: Governments spend more precisely when fertility weakens. Second, the counterfactual is unknown: fertility could be lower without support. Third, many programme benefits are welfare-enhancing even when their fertility elasticity is small. Fourth, and most importantly for this paper, stage exposure can decline. If fewer people form partnerships or marry, every

intervention conditional on pregnancy, childbirth or existing children applies to a smaller share of the aspiration-bearing population.

This fourth mechanism is distinct from the claim that cash does not work. Financial incentives can raise fertility under suitable conditions (Milligan, 2005; Raute, 2019), and comparative research finds positive associations for packages combining transfers, childcare and leave (Luci-Greulich & Thévenon, 2013). The FCG framework instead predicts heterogeneity by stage and binding constraint. A policy may have a positive local treatment effect among married would-be parents but a weak aggregate population effect when marriage exposure falls. Similarly, cash may be highly valued but have limited behavioural effect where time or career capacity is the active constraint.

The marriage bottleneck is economically consequential, not merely sociological

Marriage is sometimes treated as a cultural variable outside the core economics of fertility. In Singapore, that separation is analytically costly. Where births are closely linked to marriage, partnership formation and marriage determine entry into the fertility choice set itself. Delayed marriage also affects the expected payoff to later parity because reproductive time is finite. The economics of pronatalism should therefore incorporate search, matching, housing, job stability and life-course sequencing before the first birth rather than beginning the model at an already-married household.

This perspective also avoids a normative mistake. The policy objective should not be to pressure singles into marriage or couples into childbirth. It should be to reduce avoidable constraints for those who already express relevant aspirations. Relationship policies should therefore focus on social opportunity, relational competence, time and community infrastructure, not numerical marriage targets. The ethical unit is capability to realise a valued life plan, not demographic compliance.

Binding-constraint migration and the limits of marginal cash

A mature pronatalist state can experience diminishing behavioural returns to additional cash even if early transfers were effective. Once direct costs are partially socialised, remaining barriers become relatively more important. The Singapore evidence is consistent with this possibility: respondents repeatedly identify work-family compatibility and time alongside money, and women report a larger realised care burden despite egalitarian stated norms (National Population and Talent Division, 2022). The 2026 official consultation language of time scarcity, intense work and competitive parenting similarly points toward constraints that are only partly fungible with money (National Population and Talent Division, 2026b).

This is where the quantity-quality framework and the gender/work-family literature converge. Subsidising direct expenditure can reduce $C(q)$ in Equation (4), but parents may simultaneously raise q or continue to face high $\pi(q)$. If social expectations of good parenting require intensive educational, emotional and logistical investment, then lower direct fees need not translate proportionately into a higher n . East Asian evidence on high educational investment is particularly relevant to this mechanism (Anderson & Kohler, 2013). In policy terms, the marginal dollar should be compared with the marginal hour, the marginal career discontinuity and the marginal coordination burden.

A stage-aware policy architecture

The framework suggests replacing a single pronatalist policy question with a stage-specific portfolio question. For partner formation, the relevant variables include social opportunity, time availability, confidence in relationships and the compatibility of marriage with other life goals. For marriage to first birth, housing certainty, fertility health, leave, job continuity and care access become central. For second and higher-order births, experienced care burden, domestic division of labour, housing space, education expectations and recurring time costs may dominate. The optimal policy mix therefore changes across the conversion chain.

A practical monitoring system would estimate stage-specific hazards and unmet aspirations rather than rely principally on annual TFR. Useful indicators would include the proportion of family-aspiring singles entering

serious relationships, age-specific marriage hazards, intended versus realised first births within fixed horizons, parity-progression rates, fertility-intention revisions after first birth, return-to-work patterns, care-time asymmetries, and employer-level use of flexible arrangements and leave. These measures would allow empirical estimation of the w_j terms in Equation (5), after which policy budgets or intensities could be mapped to s_j and PCAI calculated.

Interpreting the National Day Rally 2026 reforms

The August 2026 measures deserve a nuanced interpretation. Extending support from birth through age 17 is designed to improve predictability and reduce uncertainty about the long tail of child-raising costs. More childcare leave and fuller employer reimbursement directly recognise the time constraint, while preschool and housing measures address recurring care and space constraints. In FCG terms, these changes broaden the set of margins targeted and reduce the early-years concentration of support (National Population and Talent Division, 2026d). Whether they materially alter stage-specific transition probabilities remains an empirical question for subsequent evaluation.

However, the reforms still cannot by themselves resolve upstream attrition. A person who wants a family but has no partner remains outside the exposure set for most child-related benefits. A couple that fears career penalties may not interpret formal leave entitlements as usable if workplace norms discourage take-up. A household that experiences a highly unequal domestic division of labour may not respond strongly to cash. These are not arguments against the 2026 package. They identify complementary mechanisms that must be measured if the Reset is to be evaluated on more than aggregate TFR.

External validity and comparative testing

Singapore is used here for analytical rather than statistical generalisation. The FCG mechanism should be most portable to societies in which partnership, marriage and childbirth remain strongly sequenced, family formation is late, human-capital investment per child is high, and the state maintains an extensive pronatalist policy portfolio. These boundary conditions make South Korea, Japan and Taiwan especially informative comparative cases, while also making clear that the numerical size of Singapore's transition probabilities or policy responses should not be presumed to transfer unchanged. In settings where cohabitation or non-marital childbearing substitutes more fully for marriage, p_M should be replaced by a broader stable-union or co-parenting transition.

The framework therefore generates comparative hypotheses rather than a claim of universal parameter equivalence. Countries with similar aggregate family spending may exhibit different fertility outcomes if spending is allocated to different stages, if upstream exposure differs, or if the same policy relaxes different binding constraints. A country with accessible childcare and gender-equal workplaces may sustain higher parity progression despite modest cash benefits, whereas one with large transfers but weak union formation may show limited aggregate responsiveness. External validity should consequently be judged by whether the stage-exposure and constraint-matching mechanisms replicate, not by whether coefficients are identical across institutional contexts.

A rigorous comparative test could combine harmonised event-history or panel data from Singapore, South Korea, Japan and Taiwan to estimate partnership, marriage, first-birth and parity-progression hazards, then interact those hazards with policy changes in leave, childcare, housing and financial support. Linked administrative data would permit direct estimation of stage exposure, while microsimulation could quantify how observed changes in upstream transitions propagate to completed fertility under alternative policy portfolios. Such designs would convert the framework's external-validity claim from theoretical portability into an empirically falsifiable proposition.

Research propositions for empirical testing

The theory yields five falsifiable propositions that can guide subsequent microdata research:

- P1, upstream attenuation: the population-level fertility effect of a birth-contingent benefit is smaller when the probability of partnership or marriage is lower, holding the stage-specific response among eligible couples constant.
- P2, constraint matching: time-relaxing interventions have larger fertility effects among households for whom time and career constraints are more binding, while cash has larger effects where monetary constraints dominate.
- P3, timing compression: later marriage and first birth reduce realised higher-order fertility partly by shrinking the time available for parity progression, even conditional on stated ideal family size.
- P4, care asymmetry: greater within-household inequality in childcare time predicts lower subsequent parity progression, conditional on income and initial fertility intention.
- P5, policy alignment: after accounting for total policy intensity, jurisdictions with higher alignment between stage-specific conversion losses and policy incidence exhibit higher aspiration-realisation rates.

Table 4: Testable implications of the Fertility Conversion Gap framework

Proposition	Evidence in this paper	Required next-step test
P1: Upstream attenuation	Falling/late marriage coexists with large downstream support	Linked panel data estimating stage-specific treatment effects and exposure
P2: Constraint matching	Survey identifies money, work-family conflict, stress and time; 2026 reforms add time support	Heterogeneous treatment effects by time pressure, earnings and job flexibility
P3: Timing compression	First-birth age rises while completed marital fertility falls	Event-history model of birth spacing by marriage and first-birth age
P4: Care asymmetry	Women report more childcare time and lower satisfaction with division	Couple-level longitudinal model of care division and second-birth hazard
P5: Policy alignment	Portfolio has broadened in 2026, but stage budgets and loss shares are unavailable	Construct stage-level expenditure/intensity accounts and estimate PCAI

Empirical validation agenda

The next step is empirical validation rather than further conceptual elaboration. A linked longitudinal design should follow individuals or couples from stated family aspirations through relationship formation, marriage, first birth and subsequent parity, with employment, earnings, housing, care use, leave take-up and policy eligibility observed over time. Event-history models could estimate stage-specific hazards and test Upstream Bottleneck Attenuation directly; panel models could examine intention revision and heterogeneous responses by time pressure, earnings and job flexibility; and microsimulation could translate estimated transition effects into completed-fertility counterfactuals. PCAI should be operationalised only when comparable stage-level loss estimates and policy-intensity measures are available, ideally with uncertainty intervals rather than a single deterministic score.

Future measurement should also widen the explanatory set beyond economic and institutional variables. Cultural expectations about marriage and intensive parenting, relationship quality and partner compatibility, psychological load and mental health, perceived uncertainty, and evolving preferences for autonomy, childlessness or smaller families may act as independent determinants, mediators or moderators of conversion. Incorporating these variables is important both substantively and for identification, because an apparent economic bottleneck may partly proxy changes in preferences or relationship conditions. The FCG framework is intended to organise these mechanisms by stage, not to assume that all conversion losses are economically caused or policy-remediable.

LIMITATIONS

Five limitations constrain interpretation. First, the public data used here are aggregate or cross-sectional and cannot identify causal effects of individual policies. Second, ideal family size, intention and completed fertility are different constructs; the 2021 survey cannot be used to calculate a cohort FCG. Third, 2025 demographic data are preliminary and partly affected by comparison with the 2024 Dragon Year. Fourth, policy classification by stage is necessarily imperfect because many instruments have indirect effects across several stages. Housing support, for example, may affect marriage, first birth and subsequent parity; childcare can influence both fertility and labour supply. Fifth, existing public indicators only partially observe cultural norms, relationship quality, psychological load, mental health and preference change. The economic and institutional mechanisms modelled here should therefore be treated as important candidate mechanisms, not an exhaustive account of why aspirations are revised or unrealised.

These limitations are reasons to treat the paper as a formal diagnostic framework supported by a structured case application, not as an impact evaluation. The framework would be substantially strengthened by restricted microdata linking relationship histories, marriage, fertility intentions, births, employment, housing, care use, policy eligibility and psychosocial measures. The enhanced Marriage and Parenthood Survey announced for 2026 may create a useful foundation if repeated longitudinally or linked to administrative outcomes (National Population and Talent Division, 2026a). Cross-national testing in South Korea, Japan and Taiwan should be treated as a separate validation programme designed to identify both mechanism replication and institutional boundary conditions.

CONCLUSION

Singapore's fertility challenge is often framed as a contest between the rising cost of children and the generosity of pronatalist support. That framing is too narrow. The evidence reviewed here shows simultaneous pressure at several points in the family-formation process: many young singles continue to express marriage and parenthood aspirations, yet a substantial share are not dating; marriage is later and has recently weakened; first births occur later; completed fertility within marriage has declined; and parents report binding financial, time and work-family constraints. The relevant demographic object is therefore not one fertility decision but a chain of conversions.

The Fertility Conversion Gap framework formalises this chain and proposes a specific candidate mechanism for the coexistence of strong policy effort and weak aggregate fertility. In the model, downstream policy impact is attenuated by upstream exposure. A transfer conditional on childbirth can be effective for those who reach parenthood and still have a modest population effect if fewer people reach marriage or first birth. Likewise, additional financial support can improve welfare without materially raising fertility where time, care or career constraints bind separately. The Singapore evidence is consistent with these propositions but does not by itself establish their causal magnitudes. The framework therefore reconciles, rather than dismisses, existing evidence that financial incentives, childcare and leave can matter.

The policy implication is not to abandon financial support. It is to evaluate pronatalism as a portfolio of stage-specific conversion interventions. Singapore's 2026 Marriage and Parenthood Reset and National Day Rally measures already move in this direction by broadening support across time, caregiving, preschool and housing, while explicitly continuing work on relationship formation and workplace conditions (National Population and Talent Division, 2026a; National Population and Talent Division, 2026d). The next analytical step is to measure transition probabilities, identify which constraints are binding for which groups, and test whether policy intensity is aligned with the stages where desired family formation appears most likely to be lost.

In a TFR-below-one society, the distinction matters because demographic recovery is path-dependent. Smaller birth cohorts eventually produce smaller cohorts of potential parents, making later recovery progressively harder (National Population and Talent Division, 2026e). Yet a policy response that reduces fertility to a single price signal risks spending more without learning where the conversion system is failing. The more promising objective is a society in which people who genuinely want partnership, marriage and children can convert those

aspirations into realised family lives with less avoidable friction. That is a narrower normative claim than maximising births, but a more coherent economic and social-policy strategy.

ETHICAL CONSIDERATIONS

This study analyses publicly available aggregate statistics, published survey findings, policy documents, and scholarly literature. It does not involve recruitment of human participants, access to identifiable personal data, or intervention with human or animal subjects. Institutional ethical approval was therefore not required. The analysis treats marriage and parenthood as voluntary life choices and does not assume that unfulfilled fertility or non-marriage is intrinsically undesirable; the policy-relevant concern is avoidable constraint among individuals who themselves express family aspirations.

DATA AVAILABILITY

All demographic and policy data used in this study are publicly available from the Singapore Department of Statistics, data.gov.sg, the National Population and Talent Division, the Ministry of Social and Family Development, and the Ministry of Finance. The paper reports only published aggregates. The conceptual equations and derived framework are fully specified in the manuscript.

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Conflict of Interest

The author declares no conflict of interest.

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